

**OFFICE OF INDEPENDENT OVERSIGHT
AND PERFORMANCE ASSURANCE**

**ENVIRONMENT, SAFETY, AND HEALTH
APPRAISAL PROCESS GUIDE**



March 2003

**U.S. Department of Energy
Office of Independent Oversight
and Performance Assurance
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Preface

The Office of Independent Oversight and Performance Assurance (OA) published the Appraisal Process Protocols to describe the philosophy, scope, and general procedures applicable to all independent oversight appraisal activities. The Office of Environment, Safety and Health (ES&H) Evaluations (OA-50) prepared this companion guide as part of a continuing effort to enhance the quality and consistency of ES&H oversight appraisals. When used in conjunction with the OA Appraisal Process Protocols, this ES&H Oversight Appraisal Process Guide provides necessary guidance for conducting ES&H oversight appraisals.

This process guide describes the general process and principal activities that OA-50 will

use for evaluating the effectiveness of both ES&H policies and U.S. Department of Energy (DOE) line management in implementing those policies throughout the Department.

As part of the continuing effort to improve the independent ES&H oversight process, OA-50 anticipates making periodic updates and revisions to this process guide in response to changes in DOE program direction and guidance, insights gained from independent oversight activities, and feedback from customers and constituents. Therefore, users of this process guide, as well as other interested parties, are invited to submit comments and recommendations to the Office of ES&H Evaluations. Please submit comments to contact.us@oa.doe.gov.

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Acronyms

CAP	Corrective Action Plan
CATS	Corrective Action Tracking System
CCR	Competence Commensurate with Responsibilities
CFR	Code of Federal Regulations
CSO	Cognizant Secretarial Officer
DEAR	Department of Energy Acquisition Regulation
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EH	Assistant Secretary for Environment, Safety, and Health
ESF	Essential Systems Functionality
ES&H	Environment, Safety, and Health
LLNL	Lawrence Livermore National Laboratory
INEEL	Idaho National Engineering and Environmental Laboratory
ISM	Integrated Safety Management
NNSA	National Nuclear Security Administration
OA	Office of Independent Oversight and Performance Assurance
OA-1	Office of the Director
OA-30	Office of Emergency Management Oversight
OA-50	Office of ES&H Evaluations
PPE	Personal Protective Equipment
QRB	Quality Review Board
R&D	Research and Development
TRA	Test Reactor Area
USQ	Unreviewed Safety Question

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Definitions

Appraisal – An umbrella term for any oversight activity conducted by the Office of Independent Oversight and Performance Assurance (OA). Inspections, special inspections, assessments, special studies, and special reviews are all forms of appraisals.

Corrective Action Plan (CAP) – A document that provides, for each finding or deficiency addressed, planned corrective actions; the responsible person(s) and organizations; the date of action initiation; key milestones; the date of expected completion of the action; how actions will be tracked to closure; steps to address root causes and generic applicability; and the mechanism(s) for verifying closure and ensuring that actions are sufficient to prevent recurrence. May also include a detailed discussion of longer-term enhancements and upgrades, as well as descriptions of actions taken and compensatory measures already in place.

Cognizant Secretarial Officer (CSO) – The Assistant Secretary/Director responsible for a set of facilities or laboratories (e.g., LLNL, Y-12, TRA at INEEL) within a multi-program field office.

Deficiency – An inadequacy that is found during an inspection and listed for corrective action.

Finding(s) – Concise, factual statement(s) of key observations and conclusions used to indicate significant deficiencies or safety issues that warrant a high level of attention on the part of management. If left uncorrected, such findings could adversely affect the DOE mission; environment, safety, or health of workers or the public; or national security. Findings may identify aspects of a program that do not meet the intent of DOE policy. Findings will be clearly identified in the appraisal report, will define the specific nature of the deficiency, whether it is localized or indicative of a systemic problem, and will identify which organization is responsible for corrective actions. Findings require resolution by management through a formal corrective action process.

Environment, Safety, and Health (ES&H) – Activities through which the U.S. Department of Energy (DOE) defines, develops, and implements its responsibilities under Federal laws, regulations, executive orders, and other directives to provide for the safe operation of its facilities and for the protection of the workers, the public, and the environment.

Line Management – The unbroken linkage of management personnel responsible for an organization's direction, operations, performance, and effectiveness. In DOE, it is the chain of command that extends from the Secretary to the CSO, who sets program policy, and plans and develops assigned programs, to the field organization managers, who are responsible to the CSO for execution of these programs, to the contractors and subcontractors, who conduct the programs. Line management consists of DOE and contractor personnel organizationally or contractually responsible for work or job tasks, as well as effective safety.

Noteworthy Practices – Innovative approaches or practices related to ES&H systems, programs, processes, or projects observed by the Oversight appraisal team that have proven effective in improving ES&H management systems and performance, and that could be a valuable source of information and lessons learned for other DOE sites. These practices are outlined in the Oversight appraisal report.

Opportunities for Improvement – Suggestions offered by the Oversight appraisal team that may assist line management in identifying options and potential solutions to various issues identified during the conduct of the Oversight appraisal. These opportunities for improvement are outlined in the appraisal report for line management consideration.

Ratings – Indicators of ES&H management performance levels, usually as related to the seven guiding principles or core functions of integrated safety management and associated criteria. The three ratings are Effective Performance (green), Needs Improvement (yellow), and Significant Weakness (red).

Safety – As used in this guide, includes all aspects of ES&H programs.

Safety Management – Refers to those systems required to ensure that an acceptable level of protection of the public, workers, and environment is maintained throughout the life of a facility or operation. The term "safety," when used in the context of safety management or the safety management program, specifically includes all aspects of ES&H.

Safety Management Inspection – A scheduled periodic appraisal of integrated safety management systems, as defined by DOE Policy 450.4, *Safety Management System Policy*, including their application to contractor and project management and to specific activities and work with a potential for adverse impacts on workers, public safety, or the environment.

Special Studies – As used in this guide, refers to appraisals of specific subject areas, policies, or trends. Special studies are conducted by teams with technical and managerial capabilities matched to the topic(s) and organization(s) being studied.

Technical Areas – As used in this guide, refers to the disciplines or sub-disciplines of functional areas.

Validation – The process by which OA ensures the factual accuracy of collected data and that identified deficiencies, and their impacts, are communicated effectively to responsible managers and organizations.

Walkdown – A technique for observing the condition of site equipment and structures.

Walkthrough – A technique for observing simulated actions or discussing the steps to perform a procedure.

Section 1

INTRODUCTION

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Background

The U.S. Department of Energy (DOE) is responsible to Congress and the public for assuring that operations conducted or controlled by DOE are performed in a way that protects the safety and health of operating personnel, the environment, and the public. DOE Policy 450.4, *Safety Management System Policy*, establishes the Department-wide safety management objective, guiding principles, and functions, and provides a formal, organized process to plan, assess, control and improve the safe conduct of work. Specifically, the policy states, "The Department and Contractors must systematically integrate safety into management and work practices at all levels so that missions are accomplished while protecting the public, the worker, and the environment. This is to be accomplished through effective integration of safety management into all facets of work planning and execution. In other words, the overall management of safety functions and activities becomes an integral part of mission accomplishment."

Applicable integrated safety management (ISM) provisions of the Department of Energy Acquisition Regulation (DEAR) clauses were incorporated into DOE contracts in 1997 to assure effective implementation of ISM across all DOE organizations. DOE line management completed an extensive review of ISM status across the agency, and in September 2000 informed the Secretary of Energy that ISM implementation has been verified at all DOE

sites. A robust independent oversight program is essential to ensuring that ISM implementation and other improvements remain effective and self-sustaining.

Mission

The Secretary of Energy charges the Office of Independent Oversight and Performance Assurance (OA) with conducting appraisals of safeguards and security, cyber security, emergency management, and environment, safety, and health (ES&H) programs at DOE sites. As such, OA provides DOE and contractor line managers, Congress, and other stakeholders with an independent evaluation of the effectiveness of safeguards and security; cyber security; emergency management; and ES&H policies and programs and their implementation (reference DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*). For each of these areas, OA follows a common set of overall appraisal protocols, which are described in the OA Appraisal Process Protocols.

This document, the Office of ES&H Evaluations (OA-50) Appraisal Process Guide, provides additional insight into OA's evaluation approach and processes associated with protection of the workers, the public, and the environment from the hazards associated with DOE sites and activities. The objective of this document is to establish a standard approach and methodology for conducting ES&H appraisals that is well understood by all inspection participants.

OA-50 is responsible for implementation of the independent oversight function of the DOE with regard to the effectiveness of implementation of ISM and ES&H policies, commitments, and programs for protecting workers, the environment, and the public from hazards associated with sites and work activities. The activities of OA-50 encompass:

- Performing periodic appraisals of ES&H programs at DOE sites having significant amounts of special nuclear materials or other hazards
- Performing complex-wide special reviews and studies of ES&H issues, as directed
- Developing recommendations and identifying opportunities for improving ES&H performance
- Providing feedback to DOE line management regarding the results of appraisals
- Performing follow-up reviews to ensure that corrective actions are effective
- Communicating with and responding to state and local stakeholder input
- Evaluating DOE policies related to safety management systems and ES&H program implementation
- Apprising the Defense Nuclear Facilities Safety Board (DNFSB) of OA-50 activities and issues, as directed.

About This Guide

This guide is a subordinate document to the OA Appraisal Process Protocols. While the protocols provide general guidance common to all appraisal activities, this document provides additional detail and guidance regarding procedures and methods specific to ES&H appraisals conducted by OA-50. DOE Order 470.2B is an important reference

document that defines program requirements and, in particular, defines how sites should respond to identified vulnerabilities, and the corrective action plan development process. Since all of these documents should be used together, every effort has been made to avoid unnecessary duplication. For that reason, text in this guide sometimes refers to sections or appendices of these other documents. OA-50 inspectors should maintain familiarity with information in all of these documents.

This guide focuses on the process for safety management inspections. However, the processes described in this guide are also used for special reviews or other appraisal activities, since those reviews differ only in detail. For example, the appraisal phases and the types of activities associated with each phase generally apply. When the specific needs of an activity require significant deviation from the processes in this guide, OA-50 develops a specific project plan to guide the activity.

Scope of ES&H Appraisal Activities

The scope of the ES&H oversight program includes a number of activities related to appraising DOE and contractor line management performance. The type and frequency of scheduled appraisals are based on overall OA protocols for prioritization. A brief description of these activities and associated products follows.

Safety management inspections of the line organization's performance and implementation of DOE orders, standards, policies, and other pertinent requirements are a cornerstone of the oversight program. Safety management inspections are scheduled events that are carefully tailored to assess ISM systems as they apply to contract and project management and to specific activities and work with a potential for adverse impact to workers, public safety, or the environment. Major elements of these evaluations are designed to assess the effectiveness of safety (ES&H) management systems with emphasis on:

- Institutional management processes
- Feedback and improvement processes
- Work planning and control systems
- Essential safety systems functionality.

Depending on the intended objectives of the activities, various measures within these elements are combined to define an evaluation's scope, which is carefully tailored to the need, safety history, and safety record of a site. The scope of the most comprehensive evaluation includes many elements of line management's implementation of ISM systems (in accordance with DOE Policy 450.4) and ES&H performance, and results in performance ratings that are determined by an established rating system. Less comprehensive inspections may involve a smaller sample of organizations, facilities, and activities, or they may provide greater focus on areas of past performance problems. The objective is to identify weaknesses and the underlying causal factors in the implementation of guiding principles or core functions of ISM. For example, as OA-50 monitors line management's progress in

completing corrective actions through the DOE Corrective Action Tracking System (CATS), the need for a follow-up review may be determined to examine specific findings or actions. Other focused safety management evaluations may be conducted as broad reviews of progress in implementing ISM or improving ES&H management and performance.

Special studies appraisals focus on important issues affecting a cross section of the Department's sites and programs, or they may concentrate on special focus areas. Special studies may involve multiple sites or individual facilities and may be conducted on short notice. They are flexible in form and format and reflect the established philosophy of the oversight program.

Oversight reports include special study reports, safety management inspection reports, and other reports requested by DOE senior line management. Performance ratings may be assigned based on the nature of the specific report.

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Section 2

APPROACH

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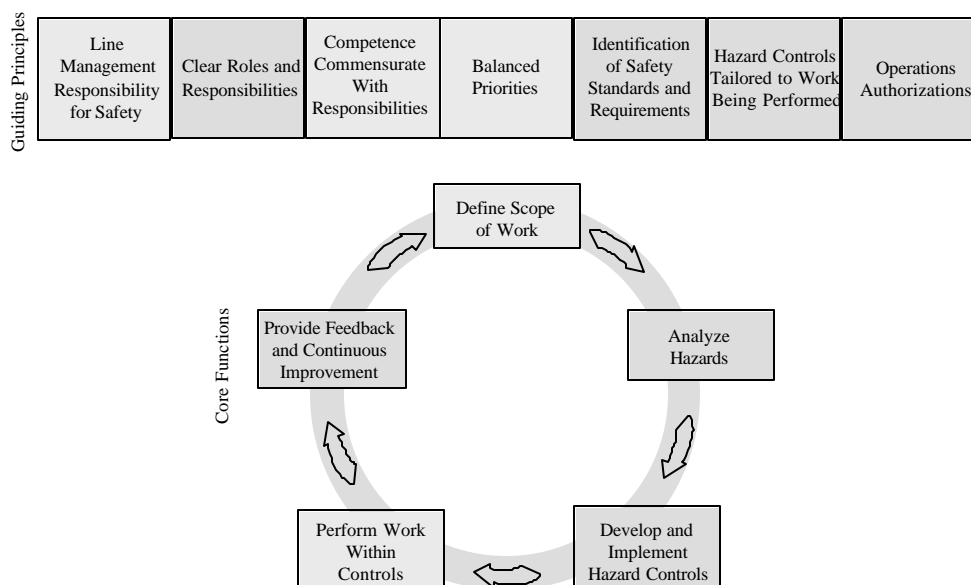
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Introduction

DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*, establishes the overall approach for conducting the ES&H evaluations program. Additionally, the requirements and responsibilities for reporting and the responsibilities of other organizations impacted and/or involved in responding to OA appraisals are included in this order. The OA

program provides a disciplined process for appraising and reporting to Department management and outside authorities, such as Congress and the DNFSB, on the implementation of the Department's ISM policy and ES&H policies and programs. This section of the Appraisal Process Guide describes the oversight program and appraisal approach, which is based on the guiding principles and core functions of ISM, illustrated in Figure 2.1.

Figure 2-1. Seven Guiding Principles and Five Core Functions of Integrated Safety Management



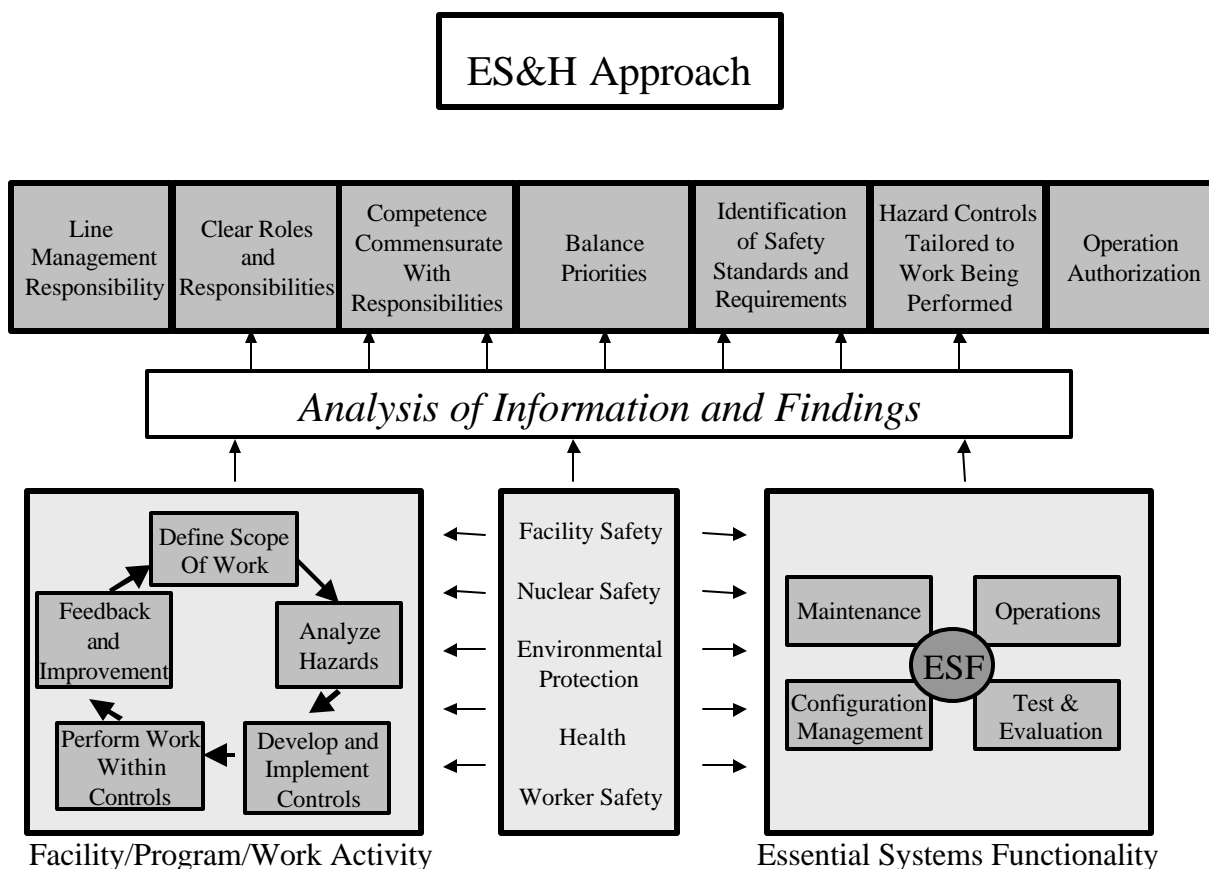
Approach to ES&H Appraisal Activities

Specific facilities, programs, work activities, or essential systems are typically reviewed during the appraisal process to evaluate the performance of line management and the programs encompassing ES&H support disciplines. Safety management systems are reviewed to ascertain their effectiveness and relation to identified performance deficiencies. The key to understanding the evaluation process is understanding how the guiding principles and core functions, along with their associated criteria, are applied, regardless of the area

evaluated, and how the results are to be evaluated and reported within the ISM framework. The typical evaluation process is illustrated in Figure 2-2. Observations are consolidated, and the team reaches consensus on the findings and ratings for areas evaluated. This process requires the team members to communicate and coordinate with each other.

The results of an OA-50 appraisal may be presented around the list of seven guiding principles, or the list of five core functions, or both the principles and the functions in separate discussions.

Figure 2-2. Typical Management Evaluation Process



The evaluation of performance includes historical performance, as indicated by management decisions and priorities, performance indicators, events, near-miss incidents, and trends, as well as current performance, as indicated by observation of safety management and field activities. Data collection during an appraisal typically focuses on guiding principles, core functions, essential safety systems (or any combination thereof), as well as the site's ISM system description document, ES&H requirements, and DOE directives.

The appraisal team's examination of whether applicable requirements have been incorporated is a major factor in assessing a site's performance in facility/program/work activities. The team carefully reviews the set of requirements that have been incorporated in site contracts and subcontracts. The appraisal team's expectations are that line management has contractually identified an appropriate set of requirements, including DOE directives and requirements, and Federal, state, and local regulations, and that these requirements are incorporated into contracts, subcontracts, and other binding agreements. The appraisal team typically evaluates the application, effectiveness, and appropriateness of the set of requirements selected by line management. The following provisions of the DEAR (48 CFR 970) clauses have been promulgated for incorporation in DOE contracts to assure effective implementation of ISM throughout DOE:

- 48 CFR 970.5204-2, requires integration of ES&H into work planning and execution
- 48 CFR 970.5204-78, deals with laws, regulations, and DOE directives, and also permits the use and application of DOE-approved tailoring processes
- 48 CFR 970.1001, encourages performance-based contracting
- 48 CFR 970.5204-86, deals with conditional payment of fee, profit, or incentive.

The policy, corresponding DEAR provisions, Functions, Responsibilities, and Authorities Manual (DOE Manual 411.1), and existing contracts are built around the seven guiding principles and five core safety management functions of ISM policy, which provide the necessary structure for any work activity that could affect the public, workers, or the environment.

In addition to the policy guides specific to ISM, other DOE orders relevant to work processes and quality improvement are listed in Appendix E. As part of OA-50's responsibility to evaluate the effectiveness of DOE ES&H policy, a finding may be issued against a Headquarters organization for the lack of effective policy in an area.

Inspection Criteria and Activities

As mentioned earlier in this report, major elements of OA-50 evaluations are designed to assess the effectiveness of site activities in relation to safety management systems, including feedback and improvement mechanisms, work planning and control systems, and the functionality of essential safety systems. To provide a uniform standard for these areas, separate inspection criteria and activities have been developed for these areas and are presented in Appendices A through D. Following is a brief synopsis summarizing the purpose and approach described in each appendix.

Institutional Management System Reviews. DOE Policy 450.4, *Safety Management System Policy*, defines the guiding principles of ISM.

- Line management is directly responsible for the protection of the workers, the public, and the environment.
- Clear lines of authority and responsibility for ensuring safety shall be established and maintained at all organizational levels within the Department and its contractors.

- Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.
- Resources shall be effectively allocated to safety, programmatic, and operational considerations. Protecting the public, the workers, and the environment shall be a priority whenever activities are planned or performed.
- Before work is performed, the associated hazards shall be evaluated and an agreed upon set of safety standards shall be established that, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from all adverse consequences.
- Administrative and engineering controls to prevent and mitigate hazards shall be tailored to the work performed and associated hazards.
- The conditions and requirements to be satisfied for operations initiated and conducted shall be clearly established and agreed upon.

OA-50 management system reviews are based on application of the guiding principles. Typically a set of guiding principles will be selected for an inspection based on the results of previous inspections, operational data, and significant events or changes at a site. Due to the significant overlap between the last two guiding principles and the core functions, the review of these principles is part of the core functions review. The inspection criteria, activities, and lines of inquiry included in Appendix A describe the elements of the management systems review and the criteria used to evaluate system effectiveness.

Feedback and Improvement Processes Reviews. DOE Policy 450.4 provides a feedback and improvement function to be implemented throughout DOE line and contractor organizations. The inspection criteria, activities,

and lines of inquiry included in Appendix B describe the elements of the feedback and improvement review and the criteria used to evaluate the effectiveness of these processes.

Work Planning and Control Systems Reviews. DOE Policy 450.4 defines the five core safety management functions that provide the necessary structure for any work activity that could affect the safety and health of the public, the workers, or the environment. The functions are applied as a continuous cycle, as previously shown in Figure 2-1, to systematically integrate safety into the management of work practices at the institutional, facility, project, and work activity level for all work. These functions are:

- **Define the Scope of Work.** Missions are translated into work; expectations are set; tasks are identified and prioritized; and resources are allocated.
- **Analyze the Hazards.** Hazards associated with the work are identified, analyzed, and categorized.
- **Develop and Implement Hazard Controls.** Applicable standards and requirements are identified and agreed upon, controls to prevent/mitigate hazards are identified, the safety envelope is established, and controls are implemented.
- **Perform Work Within Controls.** Readiness is confirmed and work is performed safely.
- **Provide Feedback and Continuous Improvement.** Feedback information on the adequacy of controls is gathered; opportunities for improving the definition and planning of work are identified and implemented; line and independent oversight is conducted; and, if necessary, regulatory enforcement actions occur.

OA-50 work planning and control system reviews examine aspects of the five core functions of ISM on the site's ability to perform

work safely. This type of review evaluates various types of work processes that typically have been established at the contractor level (i.e., project/construction, facility maintenance and operations, manufacturing, decontamination and decommissioning, and research and development). The mechanisms for feedback and improvement integral to work control processes are included within these evaluations. Institutional feedback and improvement mechanisms are evaluated separately. The inspection criteria, activities, and lines of inquiry included in Appendix C describe the elements of the work planning and control review and the criteria used to evaluate the effectiveness of planning and the conduct of work.

Essential Systems Functionality Reviews.

Essential systems provide protection of the workers, the public, and the environment from the hazards associated with nuclear operations and other hazards present at a site and/or hazardous facility operations. The purpose of an essential systems functionality (ESF) review is to evaluate the functionality and operability of systems and subsystems essential to protection of the workers, the public and the environment from these hazards. This review may be included as part of the scope of OA-50 appraisals.

An OA-50 ESF review examines aspects of modifications, maintenance, surveillance testing, and operations and their impact on the systems' ability to perform their safety functions. This type of review evaluates whether maintenance, modifications, operations, training, and qualifications are sufficient to keep the systems functional and, where applicable, within the facility's safety envelope specified in the authorization basis, including the technical safety requirements. System modifications are typically reviewed to ensure that appropriate evaluations, reviews, and approvals are in place and that the modifications have been appropriately evaluated for unreviewed safety questions (USQs). Configuration control and system drawings are also reviewed to ensure that the installed systems match design drawings and

that configuration control is documented and accurate.

The OA-50 ESF inspection criteria, activities, and lines of inquiry included in Appendix C describe the elements of the ESF review and the criteria used to evaluate the effectiveness of ES&H and safety management elements that are essential to ensuring that the engineered systems can reliably perform their designated safety-related functions. The approach is consistent with the Department's implementation plan for DNFSB Recommendation 2000-2, Commitment 10, *Assessment Criteria and Guidelines to Ascertain the Current Condition of Confinement Ventilation Systems in Defense Nuclear Facilities*, and lessons learned from the Nuclear Regulatory Commission Inspection Program on safety system functionality inspections of safety systems in commercial nuclear power plants. The criteria are based on reviews of safety systems at nuclear facilities and are tailored for review of safety systems at other hazardous facilities.

Appraisal Goals and Philosophy

The OA oversight goals and philosophy stated in OA Appraisal Process Protocols, Section 2, are adopted by OA-50 to guide appraisal activities.

Roles and Responsibilities

To ensure that planning, conduct, closure, and follow-up activities are accomplished effectively and efficiently, key functions and tasks are assigned to various OA-50 positions, based on organizational and assessment assignments.

Director, Office of Environment, Safety, and Health Evaluations

The Director of OA-50 has responsibility for and performs the following key functions and tasks:

- Oversees implementation of the OA ES&H appraisal program
- Provides overall direction and guidance

- Establishes appraisal schedules
- Interfaces with Headquarters and field personnel to coordinate activities and address concerns
- Serves as Inspection Team Leader for ES&H and emergency management inspections when designated by the OA Director
- Makes ES&H appraisal team assignments and establishes review scope
- Participates on the Quality Review Board
- Briefs senior DOE management and other stakeholders on appraisal results.

Deputy Director, Office of Environment, Safety, and Health Evaluations

The Deputy Director of OA-50 has responsibility for and performs the following key functions and tasks:

- Provides direction and guidance consistent with the OA-50 Director
- Recommends appraisal schedules
- Serves as Inspection Team Leader for ES&H and emergency management inspections when designated by the OA Director
- Supports the OA-50 Director in interfacing with Headquarters and field personnel to coordinate activities and address concerns
- Recommends appraisal team structure and scope
- Participates on the Quality Review Board, as requested
- Briefs senior DOE management and other stakeholders on appraisal results.

ES&H Team Leader

If the OA-50 Director or Deputy Director serves as the Inspection Team Leader, she/he is also the ES&H Team Leader. The OA-50 ES&H Team Leader has responsibility for and performs the following key functions and tasks:

- Leads appraisals of ES&H or other topics
- Provides input on the recommended appraisal scope
- Provides direction and guidance to team members on the approach to specific appraisal activities
- Drafts the ES&H portion of the inspection plan
- Provides feedback on the proposed appraisal team structure and makes recommendations for additional resources needed to accomplish the scope
- Makes arrangements with the site for document requests and other logistics, as needed
- Establishes the schedule of events for ES&H appraisals and makes specific assignments
- Ensures that team members perform their assigned duties
- Addresses site concerns associated with appraisal activities
- Provides feedback to site personnel on a daily basis to validate assessment information, and clearly communicates areas of concern
- Prepares and presents appraisal reports
- Briefs site management and counterparts on appraisal results.

Topic Team Leader

Major elements of OA-50 inspections include institutional management systems, work planning and control, and essential system functionality. A typical inspection team includes subteams to inspect these elements. OA-50 Topic Team Leaders are assigned responsibility to lead these subteams and have responsibility for and perform the following key functions and tasks:

- Supports the ES&H Team Leader in leading appraisals of ES&H management systems, ES&H performance in the conduct of work, or essential safety systems functionality
- Provides input on the recommended appraisal scope
- Provides direction and guidance to team members on the approach used to conduct performance testing
- Provides input to the ES&H Team Leader on document requests and other necessary logistics to support the topic team
- Provides feedback on the proposed ES&H appraisal team structure and makes recommendations for additional resources needed to accomplish the scope
- Assures that assignments and schedules are conducive to implementing the plan
- Ensures that topic team members perform their assigned duties
- Addresses site concerns associated with activities
- Provides feedback to site personnel on a daily basis to validate assessment information, and clearly communicates areas of concern
- Prepares and presents sections of appraisal reports

- Participates in briefing site management and counterparts on appraisal results.

Team Member(s)

An OA-50 team member has responsibility for and performs the following key functions and tasks:

- Supports the ES&H Team Leader and Topic Team Leader in conducting appraisals
- Provides input to the ES&H Team Leader and Topic Team Leader on appraisal scope and potential approaches
- Conducts appraisal activities following the direction and guidance of the ES&H Team Leader or Topic Team Leader
- Prepares the schedule of interviews to accomplish during the onsite visit
- Reviews key site documents prior to the onsite visit
- Conducts thorough and fair appraisals
- Validates assessment data and conclusions with site personnel on a daily basis to ensure factual accuracy
- Provides written input for draft appraisal reports as directed by the ES&H Team Leader and Topic Team Leader
- Participates in site validation meetings with counterparts and site management, as directed.

Administrative Coordinator

An OA-50 administrative coordinator has responsibility for and performs the following key functions and tasks:

- Supports the Team Leader/ES&H Team Leader, Topic Team Leaders, and team members

- Coordinates administrative needs with the site and other counterparts (hotel, office space, site access requirements, computer equipment, computer network access requirements, supplies, etc.)
- Assists the Director or Team Leader/ES&H Team Leader in preparing materials for presentations and meetings, including slides and handout materials
- Updates, reviews, and transmits schedules and daily reports as directed by the Team Leader
- Manages the team's library of documents and directs the flow of documents to team members
- Assists the Team Leader/ES&H Team Leader in producing the draft report.

Major Inspection Phases

OA-50 ES&H inspection activities may be characterized by the functional phases into

which they are organized: planning, conduct, closure, and follow-up. The planning phase includes those activities necessary to prepare for all aspects of an inspection. The conduct phase includes the portion of the site visit principally devoted to collecting and validating data. The closure phase involves data integration and analysis, issue identification, rating determination, draft report preparation and quality review, and internal management briefings. The follow-up phase includes comment review and final report preparation, Headquarters briefings, corrective action plan reviews, and corrective action tracking.

Although these phases are identified by the primary activities they encompass, actual inspection activities may overlap significantly. For example, some data is collected during the planning phase, and planning can extend into the conduct phase. Similarly, analysis begins during data collection and continues throughout the process. Subsequent sections of this guide discuss each of these phases in greater detail.

Figure 2-3 illustrates the major inspection activities for comprehensive inspections.

Figure 2-3. Major Inspection/Review Activities

<u>Development of the Inspection Schedule</u> <ul style="list-style-type: none">➤ Select sites➤ Schedule inspections➤ Notify site to be inspected
<u>Preplanning Activities</u> <ul style="list-style-type: none">➤ Assign preplanning responsibilities➤ Recommend inspection focus➤ Request documents from site➤ Make logistics arrangements➤ Conduct Headquarters interviews
<u>Scoping Visit</u> <ul style="list-style-type: none">➤ Conduct site briefings➤ Meet with site representatives➤ Tour facilities➤ Identify counterparts➤ Gather documents for planning
<u>Team Planning</u> <ul style="list-style-type: none">➤ ES&H Team Leader briefing➤ Presentation on operational data analysis➤ Conduct interviews with Headquarters personnel➤ Develop individual plans and schedule onsite activities
<u>Field Inspection</u> <ul style="list-style-type: none">➤ Conduct onsite data collection activities➤ Validate data
<u>Inspection Closure Activities</u> <ul style="list-style-type: none">➤ Develop draft inspection report➤ Provide draft report to site for factual accuracy➤ Provide outbriefing for site managers
<u>Inspection Follow-up Activities</u> <ul style="list-style-type: none">➤ Receive site comments on inspection report at Headquarters➤ Prepare final inspection report➤ Brief senior managers and Congressional committees as directed➤ Review corrective action plans

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Section 3

PLANNING

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Introduction

This document deals **only** with those aspects of planning that are most directly associated with conducting appraisals. Thorough planning is the foundation of all appraisals. Even routine and repetitive appraisals require the gathering and analysis of large amounts of information from many sources, decision-making based on that analysis, and appraisal preparations based on those decisions. The quality of planning significantly affects all other appraisal phases. Because there are limited amounts of time and other resources available for planning, planning efforts must be focused and efficient.

When scheduling an inspection, an initial step involves identifying and assigning resources for the activity. The OA-50 Director designates an ES&H Team Leader and Topic Team Leaders, as appropriate. Working with the Topic Team Leaders, the ES&H Team Leader plans the conduct of the appraisal and closely coordinates with the OA-50 Director to ensure the thoroughness and rigor of the inspection.

During OA inspections that involve a joint appraisal with the Office of Emergency

Management Oversight (OA-30), the OA-50 ES&H Team Leader will also operationally report to the Inspection Team Leader. The OA Director designates an Inspection Team Leader, who serves as both the senior DOE official managing the evaluation activities and the senior OA point of contact for the site being inspected. The Inspection Team Leader might be from OA-30, OA-50, or even another OA office for combined appraisal activities. In any case, the Inspection Team Leader, OA-50 Director, and ES&H Team Leader are responsible for closely integrating activities into a single inspection activity.

The ES&H Team Leader serves as the primary point of contact to DOE and contractor mid-level managers at the site on matters related to the ES&H aspects of the inspection. Topic Team Leaders are responsible for the planning and conduct of the inspection of the assigned topic area. Team members are assigned as needed to support the programmatic and technical review.

For integrated appraisals, the Inspection Team Leader will be the primary point of contact for the OA team and will make the necessary

arrangements with the site for space, logistics, and other common team needs. Following are the specific aspects unique to planning the ES&H portion of an appraisal that normally are handled by the ES&H Team Leader.

Goal

The goal of planning is to identify and prepare for the actions necessary to conduct an effective and efficient appraisal of the site's ES&H processes and performance.

Management Planning

Management planning responsibilities are continuous throughout an appraisal's cycle. Most of the early planning requirements are management responsibilities (as opposed to team planning responsibilities). Once an appraisal has been approved and tentatively scheduled, the ES&H Team Leader, in conjunction with the Director of OA-50, is responsible for planning activities, which may include:

- Contacting the affected sites and organizations to begin coordinating the ES&H inspections, or contacting the Inspection Team Leader to begin work for combined inspections
- Identifying and collecting documents and other information that will be needed for more detailed planning
- Conducting an initial review of available information to assist initial decisions regarding activity scope and focus
- Determining the tentative scope and focus of the appraisal, including identification of follow-up activities, as appropriate
- Developing and coordinating a site visit schedule and debriefing agenda with the facilities/organizations(s) to be visited for ES&H inspections, or working with the

assigned Inspection Team Leader for combined inspections

- Identifying and acquiring the personnel resources to accomplish both the technical and administrative support aspects of the appraisal
- Identifying and satisfying logistics needs, such as onsite workspace, hotel accommodations, computer and other equipment support, and visit requests/badging for ES&H inspections (this is performed by the Inspection Team Leader for combined inspections)
- Developing and coordinating the appraisal plan with appraisal team members
- Directing and overseeing team planning activities and site planning visits
- Overseeing the necessary ongoing planning throughout the course of the appraisal.

Management planning activities, with appropriate input from the results of early team planning activities, are used to create a formal plan for the conduct of the appraisal. As planning is continuous throughout an appraisal, so too is the formal plan a "living document," subject to modification as the activity progresses.

Site Notifications

For planned ES&H appraisals, OA management typically has established and disseminated to Headquarters and field organizations a coordinated annual appraisal schedule that defines the dates and schedules for the onsite visits with the appropriate operations or field office. OA sends a formal notification to DOE line management (i.e., the lead Cognizant Secretarial Officer [CSO] and the cognizant line manager) of the schedule of the scoping and data collection and analysis visits approximately one month in advance of the planned scoping visit.

The notification memorandum includes the date and purpose of the scoping visit as well as other relevant information. In addition, the ES&H Team Leader (Inspection Team Leader for combined inspections) typically sets up a weekly conference call with the site to establish a single point of contact to coordinate the planned visits for the duration of the appraisal, coordinate appraisal activities, identify technical points of contact, and handle requests for selected documents related to ES&H programs and safety management systems and processes.

Past experience with ESF reviews has demonstrated that identifying and retrieving detailed design basis requirements for selected essential systems can be quite difficult and time consuming for the appraisal team and site contractor. The difficulty in clearly identifying design basis requirements at many DOE sites is related, in part, to prior weaknesses in configuration management. Consequently, an effort should be made to provide the site contractor with sufficient advance notice regarding the system being considered for review, to allow the contractor sufficient time to collect the needed documentation.

Scoping Visit

The site scoping visit helps focus the evaluation early in the planning process. The appraisal team management and selected safety management system and technical specialists conduct the scoping visit several weeks before the evaluation visit. The purposes of the scoping visit are summarized in Table 3-1.

The scoping visit typically lasts three days. Before the visit, the Team Leader, in coordination with the site, prepares a schedule of activities for the scoping visit, which generally covers a formal debriefing of selected topics, facility tours, and team management interviews of key senior managers. In addition, the team members assigned to the scoping visit also schedule other activities through their assigned site counterparts. The team members' primary

objectives are to understand safety management system processes, collect related documents, and identify ongoing site activities for observation during the onsite appraisal period to facilitate detailed planning efforts in Headquarters. During the OA-50 preparation and planning phase of the evaluation, meetings are typically scheduled with the Headquarters line managers.

Team Structure

Team structure greatly depends on the scope and complexity of the appraisal. Elements common to most appraisal teams are discussed below.

The Inspection Team Leader is assigned by the OA Director. For combined inspections where the Team Leader is not from OA-50, the OA-50 Director assigns an ES&H Team Leader. The team members from OA-50, and any independent consultants, are professionals who possess technical and appraisal expertise in their assigned field. OA-50 team members maintain qualifications in their assigned technical areas, in accordance with the DOE technical qualification program.

The typical team organization is designed to promote a single, integrated team effort. All team members work together to pass along information and potential issues of mutual interest. This team organization is intended to facilitate the management of the team and the rollup of information, not to limit or impede access to the Team Leader or other team members by individual evaluators. Team members are encouraged to keep each other informed of important issues or common lines of inquiry. For example, an evaluator may find a problem during an ESF inspection that is caused by inadequate training. This information should be passed on to others on the team who are evaluating different key safety management systems' ES&H elements. Doing so may expose a larger, more pervasive problem in ES&H training programs. Team members should not assume that they are to function only within their key element or technical area. Rather, they

Table 3-1. Purposes of the Scoping Visit

- To meet with DOE and contractor points of contact or counterparts to understand safety management system processes and related documents
- To meet with senior DOE and contractor management to discuss appraisal objectives and solicit feedback and input on the appraisal scope
- To meet with stakeholders to convey the purpose, preliminary scope, and approach for the appraisal, and solicit feedback
- To conduct facility tours and discussions with facility management on planned and ongoing work activities expected during the onsite appraisal
- To meet with site counterparts to obtain an overview of key systems (feedback and improvement, requirements management, work control, essential systems, etc.) and to identify and collect system documents, as appropriate
- To finalize the appraisal scope and identify focus areas for the appraisal
- To identify additional DOE and contractor points of contact or counterparts (site and Headquarters) and document needs
- To coordinate logistical arrangements, including team space, site access training, and the need for reviews by an authorized classifier

should work together across disciplines and areas of expertise to share information, request assistance, and follow up on lines of inquiry. The appraisal and the resulting report is a compilation of the team's efforts, not of any single individual.

The ES&H Team Leader manages the planning efforts, assigns evaluation tasks, and coordinates the data collection activities of the appraisal team. The ES&H Team Leader is responsible for the rollup of positive attributes and programmatic weaknesses developed by the team members for use in preparing assigned sections of the evaluation report.

An administrative support coordinator supports the appraisal team. The coordinator oversees the administrative and logistical support required by the team and serves as the point of contact for onsite support.

Team Selection

Appropriate team members must be selected to evaluate the key ES&H program and safety management system elements that are scheduled for review. The final team composition is usually set following the scoping visit. The ES&H Team Leader (if applicable), Topic Team Leaders, team members, and an administrative support coordinator are typically identified at the start of planning, when tentative scope determinations have been made. The composition of the team is based on the known mission and major facilities at the site to be evaluated. This initial group works together during planning to identify not only the scope and potential focus areas of the appraisal, but also to identify additional OA-50 team member assignments in the areas within the appraisal scope.

As planning for the appraisal progresses, the ES&H Team Leader refines the scope and focus of the appraisal and may also amend the team roster to reflect these changes. Team members may be asked to accept additional assignments, new team members may be added to address particular technical areas, and team members may be dropped as the planning process progresses. The OA-50 Director and ES&H Team Leader structure and compose the team as they see fit to meet the needs of appraisal activities.

Appraisal Plan

A final inspection plan is developed as soon as possible following the scoping visit, although preliminary work on a draft version of the evaluation plan begins before the scoping visit. The goal is to provide the inspection plan to the site at least three weeks in advance of the data collection and analysis portion of the appraisal. Appraisal team management develops the plan, which reflects the evaluation objectives and focus areas, and the associated inspection criteria, activities, and lines of inquiry. The inspection plan is approved by the OA Director and is then transmitted via cover memo by the Office of the Director (OA-1) to the site, program office, and operations office. Team members use the plan to develop more detailed data collection plans containing specific lines of inquiry and data collection techniques. A typical outline for an inspection plan is shown in Table 3-2.

Team Planning

Team planning refers to planning efforts that begin after the appraisal team is finalized and assembled. The team planning meeting is the first meeting involving the entire team. It serves to kick off team planning and to orient the team on the process and objectives of the appraisal. It is important to bring the team together early and to get individuals working in a team environment.

Team planning activities concentrate on understanding the site's safety management system processes and determining appropriate data collection techniques that will provide insight into the effectiveness of implementation of ES&H program elements and safety management system processes reviewed. During this period, team members review available site documents to better focus their data collection plans. This should enable them to use the limited time available more efficiently while on site.

Team members are tasked with measuring the effectiveness of the ES&H activities by evaluating facilities, programs, and technical functional and focus areas (see Section 2). As will be discussed in Section 4, observations—walkthroughs, walkdowns, and performance observations—are extremely valuable methods of gathering data. To maximize use of these methods, team members need to plan their data-gathering activities so that these observations can be dovetailed with more-easily scheduled data collection activities, such as document reviews of programs and procedures, as well as interviews with facility-level DOE and contractor management and workers.

Development of individual detailed data collection plans and a tentative schedule of onsite activities (i.e., interviews, walkthroughs, document reviews, observations, etc.) are the primary products resulting from team planning. The ES&H Team Leader reviews the team members' schedules to identify duplications and areas not fully addressed, and to focus and redirect team member activities to ensure that the scope of the appraisal plan is adequately covered. Typically, the team members' individual schedules of onsite activities are provided to the site's designated point of contact prior to the onsite appraisal period to facilitate coordination and to minimize the impact of planned team activities during the onsite appraisal period.

Table 3-2. Typical Inspection Plan Contents

- Introduction
- Schedule
- Team Responsibilities and Assignments
- Inspection Process
- Scope of Inspection Activities
- Inspection Criteria, Activities, and Lines of Inquiry
- Rating System Description (if applicable)

The data collection process begins at Headquarters during the team planning phase before shifting to the site. During team planning, team members conduct preliminary interviews with responsible Headquarters management and staff personnel, retrieve Headquarters documents, and conduct other data collection activities. Although team members will concentrate on different activities, it is imperative that they *coordinate their activities with their site counterparts* and other team members to address the scope and objectives identified in the appraisal plan, to maintain focus, and to promote efficient use of team resources. The major activities that occur during team planning are summarized in Table 3-3.

While much of the detailed planning for an appraisal should be accomplished at the planning meeting(s), planning is an ongoing effort and may continue into the conduct phase of the activity. Managers and team members alike are expected to remain flexible and ready to adapt plans to respond to unexpected circumstances that may arise during any phase of an appraisal.

Team Communications

Effective, frequent communication is one of the most important keys to a successful evaluation.

This includes communication among team members and between the team, OA management, line management, and external stakeholders. The team's communications with external stakeholders are extremely important to the evaluation, since the stakeholders are involved during various phases of the review.

Several different types of meetings and briefings are necessary to maintain team communications during the evaluation. These include written daily reports by both the ES&H Team Leader (to OA management) and team members (to team management), and formal and informal counterpart meetings between the team and the site (see Section 4). Effective communications within the team cannot be limited to formal meetings or written internal status reports. Team members must exchange information as needed to produce a consistent, integrated evaluation. Typical forums for such communication are ad hoc, face-to-face meetings, telephone conversations, and even conversation over lunch or in the car while riding to the site.

Table 3-3. Major Activities During Team Planning

- Brief on the results of previous management planning activities, including the observations and results from the scoping visit, insights on operating experience history of the site, and any management guidance and expectations.
- Review and analyze available documentation.
- Contact site counterparts to gather additional information and to identify and coordinate team onsite activities.
- Conduct interviews with DOE Headquarters program office managers.
- Coordinate appropriate information exchanges with representatives from Headquarters and the field.
- Recommend any modifications to activity scope and focus that result from planning activities.
- Determine appropriate data collection methods and develop detailed data collection plans, including any necessary performance test plans, safety plans, etc.
- Develop a schedule of data collection and related activities.
- Identify additional information and support requirements, and communicate them to the appropriate individuals or organizations.
- Brief or otherwise inform team management of planned activities.
- Coordinate logistics and travel plans with the administrative assistant.

Summary

Planning occurs throughout the appraisal process and results in the products shown in Table 3-4. Efficient and thorough planning activities result in the team having the necessary plans and resources to accomplish an accurate evaluation of ES&H performance and line management's implementation of the ISM policy.

Table 3-4. Products of Planning

- Finalization of appraisal scope
- Document request lists
- Team roster and structure
- Inspection plan
- Data collection plans
- Individual schedules for onsite activities

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Section 4

APPRAISAL CONDUCT

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Introduction

The conduct phase of an appraisal occurs when the majority of the needed data is collected. This may consist of a concentrated effort during a relatively short period of time, or it may occur over an extended period, as in some special studies. The conduct phase is tailored to the unique needs and objectives of each specific appraisal. This stage is crucial to the success of an appraisal because it is during this stage that team members collect most of the information upon which they will base their analyses, conclusions, ratings, and recommendations, when appropriate. The goal of conducting an appraisal is to accomplish all planned data collection activities in a fair, impartial, professional manner and to validate the technical accuracy of the collected data.

Goal

The goal of the appraisal conduct phase is to effectively gather sufficient data to evaluate ES&H performance, to identify areas of weakness as well as effective performance, and to validate the data with responsible managers.

Scope

Data collection activities generally follow the plans and schedules developed during the formal planning process. Team members normally

focus on accomplishing planned activities; however, data collection activities can be adjusted to accommodate changing conditions. For example, early data collection results may necessitate reduced or expanded activities in planned areas of emphasis and/or investigation of areas not originally identified for review. Problems or potential problems that become apparent during the course of data collection should not be ignored simply because they were not included in formal planning.

Data Collection Methods

Since data is critical to a successful appraisal, it is essential that appropriate data collection methods be used to collect sufficient amounts of accurate, pertinent data. There are three basic methods of data collection available to team members: document reviews, interviews, and performance evaluation. Since each of these methods has inherent strengths and limitations, the specific methods employed must be carefully selected and used in combination with each other to ensure that all necessary data is collected and cross-checked.

Document Reviews. Line management usually relies on detailed documentation, such as policies, plans, and procedures, as well as self-assessment activities, to ensure that programs are properly implemented and administered. Document reviews can provide the team with

information about the consistency of written policies and procedures with DOE requirements (an indication of how the program is intended to operate) and may suggest weaknesses that need further exploration. Requests for required documents, where possible, should be made early enough so that team members can review them during onsite planning activities. Team members should limit the initial document requests to only those documents that are not available to them electronically and that are essential to their planning and preparation effort.

The team may request that certain documentation be made available either prior to the site scoping visit or at the site, for use when data collection begins. Document reviews often continue throughout data collection as team members request additional documents to develop a more complete understanding of programs and how they function. Requests for additional documents are directed to the appropriate point of contact or counterpart.

The documents of most interest are usually policy documents on how programs are designed to function; written program plans and procedural documents; self-assessments; and other records that may indicate whether programs are implemented as required or designed.

Interviews. Interviews can provide useful data that is not readily available from other data collection methods. Interviews are most effective in determining perceptions and individual understanding of policies, procedures, duties, and management expectations. While both formal and informal interview techniques may be employed, deliberate preparation is necessary before any interview. Appendix A of the OA Appraisal Process Protocols provides information on interview techniques. Table 4-1 lists protocols to assist in the conduct of interviews.

Performance Evaluation. Performance evaluation is the key method to independently evaluate performance. There are four basic

approaches utilized for performance evaluation: observations, procedure walkthroughs, system walkdowns, and facility walkthroughs. Observation of actual performance is the preferred method for evaluating the conduct of work because it provides an opportunity to evaluate during the actual conditions. When operations or activities cannot be performed due to facility conditions or other factors, walkthroughs of procedures are used to evaluate performance. System/facility walkdowns are used for firsthand evaluation of the condition of systems/equipment important to safety or the status of facilities. The three methods for evaluating performance are detailed below.

➤ **Observations.** A team member's physical examination of operations is often the most reliable data collection technique. Observing operations may be not only desirable but also necessary for an accurate evaluation in situations where specific, observable operations are critical to effective performance. Observations allow team members to see how site personnel actually do their jobs and to evaluate how they perform their duties under various conditions. For example, observing personnel monitoring equipment or observing a sampling event provides valid data on whether site personnel follow established procedures and whether they operate the equipment properly. Before observing someone executing a procedure, the team member should thoroughly review and understand the procedure to establish a baseline for the observation. During observations, team members must not interfere with ongoing activities, manipulate equipment or controls, or access components (such as electrical cabinets), and they must comply with all applicable radiological, security, and safety requirements. Team members will ensure that talking to or asking questions of operators, craft workers, etc., during ongoing activities will not unduly distract the workers or disrupt their activities. In some cases, walkthroughs of

Table 4-1. Interview Protocols

- ☐ Prepare questions and lines of inquiry in advance.
- ☐ Assure prompt team attendance at scheduled interviews.
- ☐ Do not “lead” interviewees in answers and conclusions.
- ☐ Typically conduct interviews in the interviewees’ work location to promote easy access to applicable documents.
- ☐ Limit team attendance to one or two interviewers. Limit attendance by line personnel to the interviewee, unless the interviewee requests the attendance of a manager or union representative.
- ☐ Requested attendees should not respond to questions asked of the interviewee, but should provide only advice and support to the interviewee.
- ☐ To ensure an open and candid interview and exchange of information, requests from individuals, including managers, to attend interviews will not normally be entertained unless requested by the interviewee.
- ☐ Explain the purpose of the interview.
- ☐ Pace questions to allow full response, and avoid a “third degree” atmosphere, particularly when multiple interviewers are involved.
- ☐ Question tactfully, listen sensitively, observe thoughtfully, and evaluate accurately.
- ☐ Take good interview notes. Do not rely on memory.
- ☐ Summarize the interview at the end to assure that interviewer conclusions and interviewee concerns are appropriately captured.

procedures may be conducted to gain insights on performance.

- **Procedure Walkthroughs.** Procedure walkthroughs are used when an operation or activity cannot be performed due to facility conditions or other reasons. When appropriate, walkthroughs are conducted at the site where the operation would normally be conducted (control room, operating station, etc.). The individual should simulate the actions as much as possible. However, in no case should the walkthrough interfere with normal operations or allow for unauthorized operation of equipment. The

walkthroughs are important in assessing operator knowledge of procedures and equipment as well as the adequacy of procedures. Discussions on actions for abnormal conditions should also be utilized to determine knowledge and use of supplemental procedures for these conditions should they arise. Before conducting walkthroughs, the team member should thoroughly review the procedures and be familiar with affected equipment and systems. Procedure walkthroughs should be planned, coordinated, and scheduled in advance and involve a sample of procedures and operators.

➤ **System Walkdowns.** System walkdowns are essential in evaluating the condition of systems and equipment important to safety. They are also helpful in evaluating the knowledge of responsible individuals, such as operators, system engineers, maintenance personnel, supervisors, and/or facility managers. Therefore it is useful to be accompanied by a responsible individual during walkdowns. Walkdowns are important in evaluating physical condition of equipment and determining whether it has been properly maintained and is in the proper configuration. They must be used in conjunction with review of such documents as maintenance records or modification packages. The condition of essential components can be observed, and abnormal conditions can be identified (leaks, noises, etc.). The proper installation of essential equipment can be verified against drawings and design criteria. Walkdowns also provide an opportunity to determine if procedures, drawings, and labeling are accurate and up to date. Prior to walking down a system, documents that describe the system should be reviewed to determine proper configuration and essential components. The walkdown should focus on the essential components.

➤ **Facility Walkthroughs.** Facility walkthroughs provide insights on the condition of facilities involving hazardous operations or storing hazardous materials and waste. Prior to the walkthrough, the team member should review facility hazards and controls. The adequacy of implementation of hazard controls can then be determined. These include such items as labeling, quantities of and proper storage of hazardous materials, life safety requirements, and housekeeping. A questioning attitude towards observed hazards is important, and controls should be verified for observed hazards. Walkthroughs should be conducted with an individual that is knowledgeable of the facility hazards. Facility walkthroughs

should be scheduled with facility management, and all access requirements should be completed in advance.

Other Methods. While the three basic data collection methods are specified above, OA-50 personnel are not limited to these basic methods, as described. Different or hybrid methods may be used, and personnel are encouraged to employ the best techniques available for a specific task.

Communications and Integration

Since various team members collect data during virtually all phases of appraisals, it is important that all appropriate information is shared among team members in a timely manner. Information collected by one team member may have a direct impact on a line of investigation being conducted by another. When teams are large—and particularly when several teams are involved and each is focusing on a different area or discipline—a conscious and deliberate effort at information integration is required. Specific methods for achieving integration vary from formal to informal; the method chosen may be dictated somewhat by team size and the type of activity involved, and may include team meetings, shared data collection notes, and daily reports to managers. Specific methods to be employed are left to the discretion of the responsible team members or ES&H Team Leader. A daily report summarizing the progress of the overall appraisal and significant emerging issues is typically provided to OA-1, OA-50, and others, as appropriate. Similarly, individual team member daily reports summarizing the results of the day's activities are provided to team management.

When potentially serious deficiencies are identified during an appraisal, they must be brought to the attention of the ES&H Team Leader, the responsible organization's managers, and OA senior management as soon as possible. After enough data is collected to be reasonably sure that a significant deficiency exists, it should be identified, formally communicated to the

responsible site managers, and discussed in sufficient detail to ensure that it is understood. This is part of the validation process discussed below. Such deficiencies may or may not ultimately result in formal findings or policy issues, depending on the individual circumstances.

The Team Leader will provide routine updates of significant deficiencies to OA-1. DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*, contains additional specific requirements for notifications and response to significant vulnerabilities.

Validation

Validation is used to verify the accuracy of the information obtained during data collection activities. It is a critical element in the conduct of all appraisals. This section provides an overview of the process used to validate data and the draft report.

Data Validation Strategy. The validation strategy provides site personnel with multiple opportunities to verify the factual accuracy of data and information collected by team members at various stages of the actual appraisal process. In using any of the validation methods, team members must be very open about issues in order to provide those being evaluated with a chance to respond. These interactions often are of significant value to the site because they provide a means to share perspective gained from other sites in the complex. Key elements of the strategy include:

- **Site counterparts.** Each team member is typically assigned one or more site points of contact or counterparts, both DOE and/or contractor, designated by the site as a result of the scoping visit (Section 3). These counterparts are knowledgeable of the program element being evaluated by the team member. Team members and counterparts interact on a regular basis to ensure communication of findings, both

positive and negative. Counterparts provide feedback to team members on the factual accuracy of information obtained; they recommend additional personnel to interview, as well as documentation to review for additional perspective on an issue. Additionally, team members informally discuss and review substantive issues with their counterparts on material they will draft into reports. This allows for the quick resolution of areas of disagreement and the identification of potential inaccuracies as soon as possible. In addition, routine validation of results between team members and counterparts provides further confirmation that results are valid and allows less room for misunderstanding.

- **On-the-spot validations.** Site personnel and team members should also summarize key observations and concerns at the conclusion of interviews, walkthroughs, and observations of work performance to ensure a shared understanding of the facts observed by the team member. An on-the-spot validation immediately after an interview or a performance observation, for example, can help resolve any differences of opinion quickly and promote concurrence on important interview or observation points.
- **Continual interaction of the ES&H Team Leader and site managers.** The ES&H Team Leader provides to site managers a daily “debrief” that includes both the positive and negative observations from the previous day’s evaluation activities, as well as emerging issues. For example, the ES&H Team Leader usually meets with site senior line managers each morning to brief them on the status of the evaluation, important issues, and critical needs. The ES&H Team Leader may also call upon selected team members to attend. This daily meeting helps site management track the progress of evaluation activities and compare information provided by the site counterparts. The daily debrief

allows site management to identify areas of disagreement quickly and to work with the OA-50 team to correct factual accuracy problems. In many cases, site management is informed of issues that need management attention. At the mid- and end points of the onsite data collection period, these daily meetings are used to provide a preliminary rollup of team results and a description of issues that are being developed by the team. In addition, if a draft report is not to be provided to the site prior to the team's departure, an informal presentation of tentative results is conducted at the end of the onsite visit. DOE, operations office, and site senior management, as well as site points of contact, are expected to participate.

- **Summary validation.** For a summary validation, one or more team members provide a verbal presentation of key observations, findings, and conclusions to a group of counterparts and interested managers. A summary validation may be conducted when it is appropriate to involve site managers early in the validation process, to provide more information on one or more topics than they would otherwise get in the exit briefing.
- **Team interactions.** Team members also work together to compare the information they have collected during various stages of the appraisal process. This interaction increases the value of evidentiary information with validation by multiple sources. Team members should understand that each type of data and information has its limitations and should be used accordingly, and that the information presented for validation must be as thorough, accurate, and concise as possible. Finally, it is essential that conflicts in data and information are resolved as soon as possible, between team members or between team members and site personnel.

Report Validation Strategy. Reports from the OA-50 appraisal are provided to site personnel for review of factual accuracy at key stages in appraisal report generation. This provides the site personnel and management with a number of opportunities to communicate concerns about factual accuracy to the team. The report validation process is as follows:

- Provide the draft evaluation report to the site.
- Conduct informal pre-validation meetings between team members and counterparts regarding the content and conclusions of the draft report. These small group meetings are extremely useful for conducting detailed discussions of the findings, correcting factual accuracy problems at the working level, and addressing the identified problems.
- Conduct a formal validation with key DOE/contractor counterparts. Roundtable discussions are held with site management and counterparts on their concerns about the facts or conclusions presented in the report. Headquarters line managers may also attend the formal validation; this is especially important for findings that Headquarters organizations are primarily responsible for addressing. These sessions are also used to further explain issues, and they have been very effective in promoting buy-in with site management. Any findings related to DOE ES&H policies should be validated with the Office of the Assistant Secretary for Environment, Safety and Health. After review, comments from formal validation are incorporated into the final draft report as appropriate, and it is then provided to the site.
- Provide the final draft report to the site and allow 10 working days for their detailed review. The site is encouraged to provide

specific written comments on any factual inaccuracies or other concerns.

Keys to Successful Validation. Some key items for successful validation are provided in Table 4-2.

Table 4-2. Keys to Successful Validation

- Candid and frequent communications with line management and site points of contact
- Effective communication of issues and findings to counterparts and site managers
- Adequate development of issues, findings, or conclusions, including performance examples, to assure validity, understanding, and acceptance by line management
- Communication of emerging issues, findings, and supporting examples, to assure that all information is provided and that the issue is understood and valid
- Opportunities for review at various stages of report generation
- Sharing of issues and findings with Headquarters line management, or sharing policy issues with the Assistant Secretary for Environment, Safety, and Health

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Section 5

APPRAISAL CLOSURE

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Introduction

The closure phase of an appraisal normally takes place after data collection and validation is essentially complete (although at times, closure activities may identify additional data needs). Data must be organized, assimilated, and analyzed in order to form conclusions and report the results. This section discusses the various tasks to be accomplished during the closure phase, including data analysis, determination of findings, assignment of ratings (if appropriate), report preparation, and others.

Goals

The main goals of this phase are to thoroughly analyze all available data, draw valid conclusions from that analysis, and, based on the analysis and conclusions, prepare a report that accurately reflects the status of the program(s) being examined and provides appropriate managers the information they need.

Integration

The information integration discussed in the previous section continues to be important during the closure phase. During data analysis,

all pertinent information, regardless of who collected it, should be considered in the effort to reach valid conclusions. Raw data, conclusions, and other results of analysis should be shared, as appropriate, among team members.

Analysis of Results

While analysis is an ongoing process during all phases of an appraisal, it culminates during the closure phase. Analysis involves a critical review of all data collection results, particularly identified program strengths and weaknesses, and leads to logical, supportable conclusions regarding how well the program functions and satisfies the intent of DOE policy.

Analysis begins informally through daily team discussions about the observations and results of data collection. As data collection activities are completed, the results are incorporated into templates and worksheets to help guide the team member through a preliminary data analysis. All team members work in concert to continually identify underlying causes of flaws or deficiencies in management systems, program design, and/or implementation. Each specialist needs to know the details (who, what, when, where, how, and why) of the subject being

evaluated to gain a full understanding of the supporting systems and how they function. Frequent and open communication with other team members is the key to identifying and “rolling up” information and issues to determine their impact.

While data analysis occurs throughout an evaluation, it begins in earnest during the first onsite data collection and analysis visit. Before the team begins to write a report, the members must clearly identify the strengths, weaknesses, and mitigating conditions, and must integrate the results and findings.

The analysis leads to logical and supportable conclusions about the effectiveness of the programs being evaluated and how well the status of the programs satisfies the intent of DOE policy. Analysis should always lead to a conclusion regarding the site’s ability to mitigate the consequences of incidents, and to protect site workers and the public. Any deficiencies must be addressed for their importance and impact at the site.

If there are no deficiencies, analysis is a relatively simple matter. If there are findings, weaknesses, deficiencies, or standards that are not fully met, these must be considered individually and collectively and then balanced against any strengths or mitigating factors to determine the overall impact on the performance of line management and the program’s effectiveness. Factors that should be considered during analysis include:

- Whether the deficiency is isolated or systemic
- Whether program managers and other line managers knew of the deficiency and, if so, what actions were taken
- The importance or significance of the standard affected by the deficiency

- Mitigating factors, such as the effectiveness of other programs or program elements that may compensate for the deficiency
- The deficiency’s actual or potential affect on mission performance or accomplishment
- The magnitude and significance of the actual or potential deficiency to the DOE, site, workers, public, and environment.

The analysis must result in—and support—conclusions regarding how successfully the evaluated program meets requirements.

Findings

One product of analysis in certain types of appraisals (e.g., inspections and follow-up reviews) is the identification of findings (i.e., safety issues). Findings are used to indicate significant deficiencies that merit managers’ priority attention. Team members are responsible for identifying potential findings for consideration by team management. Findings usually identify aspects of a program that do not meet the intent of DOE policy, Federal or state laws, or other applicable requirements. Section 5 of the OA Appraisal Process Protocols discusses findings in more detail.

Rating System

OA-50 assigns ratings to the to various elements of ISM systems policy. These ratings are based on conclusions reached through analysis of inspection results. The teams are responsible for assigning the ratings; however, the Director of OA has established a quality control process to ensure that the assigned ratings are supported by the analysis and conclusions drawn by the team.

Report Preparation

A report is issued as the formal product of any appraisal. Reports are the only published

records of specific appraisals, and are intended for dissemination to the Secretary and appropriate managers at DOE Headquarters and field elements (including, when appropriate, facility contractors). Reports for various types of appraisals may vary in format; the most appropriate format for the specific purpose will be used. Appendix C of the OA Appraisal Process Protocols provides guidance for preparing the portions of appraisal reports that are targeted at senior management. ES&H inspection reports are typically prepared using the report format in Appendix C of the OA Appraisal Protocols. For all independent oversight activities, report preparation activities share a common process:

- The team prepares an initial draft report.
- The initial draft is reviewed by a Quality Review Board (QRB) to ensure that it is readable and logical, and that it contains adequate, balanced information to support conclusions (and, if appropriate, ratings). The QRB may require revisions to the report.
- After review by the Quality Review Board and tentative approval by the Director of OA, the initial draft is provided to appropriate line organizations for a factual accuracy review. A copy of the initial draft report is provided to the responsible DOE field element and the representative of the CSO, if on site, which are allowed a limited time to provide verbal and written comments regarding factual accuracy. All comments are reviewed and appropriate changes are made to the draft report.

The final draft report is provided to the DOE field element with a copy to the CSO. The DOE field element and CSO have 10 working days to comment on the final draft report. This review ensures that the report contains sufficient detail, is factually accurate, and serves as a tool for improving performance. The review is not intended to allow the reviewers to eliminate

conclusions, findings, or ratings that show the site or office in an unfavorable light.

Quality Review Board

Following development and internal quality reviews of the draft evaluation report by the appraisal team management and technical specialists, the QRB conducts a formal review and critique of the draft report. The QRB is appointed by the Director of OA and is chaired by the Deputy Director of OA. Membership includes at least two senior advisors and the Director of OA-50. The QRB membership can be adjusted based on special needs. The QRB provides a corporate-level review of the draft report developed by the evaluation team to ensure that it accurately, fairly, and objectively reflects the results, conclusions, findings, recommendations, and ratings of the evaluation.

Briefings

The closure process for appraisals often includes a requirement to brief appropriate managers on the progress, results, and conclusions of the activity. Briefings fall into two main categories: internal and external.

Internal briefings apprise OA managers and staff of the status of an ongoing activity, providing information necessary to keep them informed of results and issues so that they can provide necessary direction and guidance.

External briefings apprise managers outside of OA—normally managers of organizations undergoing an appraisal—of the results and conclusions of an appraisal activity. A closeout briefing to managers of appraised organizations is provided at the conclusion of an appraisal activity. The closeout briefing, normally scheduled for the morning of the last day on site, generally includes summaries of the status of each key program element reviewed—including major strengths and weaknesses—and of the overall ES&H management program, and the ratings assigned to each.

The need for briefings associated with other types of appraisals will depend upon the specific nature of such activities. The structure, level of detail, and specific content of briefings is tailored to the needs of the audience and the specific information that needs to be communicated.

Process Improvement

OA-50 consistently strives to improve its internal processes as part of its continuing effort to improve its products and the value they provide to the Department. During the closure

phase of each major appraisal, and typically before the team leaves the site, Team Leaders meet with the team members to identify any lessons learned in conducting the appraisal. Team members may also provide written comments to the ES&H Team Leader as to how the appraisal process could be improved. The ES&H Team Leader submits a written lessons-learned report to the OA-50 Director, identifying both positive and negative aspects of the appraisal and any recommendations for improving the appraisal process. Recommended improvements should address any necessary revisions to the ES&H Appraisal Process Guide.

Section 6

APPRAISAL FOLLOW-UP

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Introduction

Upon completion of onsite appraisal activities, a number of tasks remain to close out an appraisal. These include conducting any necessary briefings, preparing and issuing a final appraisal report, assessing corrective action plans, submitting any policy issue papers, and preparing to follow the progress of corrective actions.

Goals

The primary goals of the follow-up phase are to prepare and disseminate an accurate account of the appraisal results through a final report and appropriate briefings; review proposed corrective actions for adequacy; and provide policy issue papers to the senior managers of appropriate Headquarters organizations.

Headquarters Briefings

Prior to returning to Headquarters, OA-50 develops a one-page summary of appraisal results for submittal to the OA-50 Director. The one-page summary must be validated with site personnel to ensure factual accuracy. The purpose of the one-page summary is to communicate the results of the appraisal to senior DOE managers, including the Secretary, Deputy Secretary, Under Secretary, and/or the

Administrator for the National Nuclear Security Administration. Upon request, the OA-50 Director or Team Leader may be required to brief these senior managers on the one-page summary. Other senior Headquarters managers may be included at the discretion of the senior official being briefed.

After each appraisal, OA coordinates with the CSO and the Office of the Secretary to develop an approach for providing results to external stakeholders, including any needed briefings. Such briefings to external stakeholders do not normally take place until after the final report is issued; OA's responsibility is to provide the briefing on the inspection results.

Final Report

The CSO and the DOE field element have 10 working days from their receipt of the final draft report to provide OA-50 with their consolidated comments regarding its factual accuracy. OA-50 then considers the comments, holds consultations between managers and the appropriate staff members, and determines the OA-50 action on each response.

OA-50 publishes the final report 10 working days after receipt of the consolidated comments. The final report is distributed to the Office of the

Secretary, the CSO, and the DOE field element. OA-50 makes further distribution of the final report as directed by the Director of OA.

Corrective Action Plans

Protocols for corrective action plan development, review, comment, and approval are contained in DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*.

Within 60 working days of their receipt of the final report, the CSO and DOE field element will issue a final corrective action plan. Final corrective action plans should address, in detail, all completed, ongoing, and long-term actions associated with each finding in the report.

The appropriate OA-50 personnel then review the proposed corrective actions; preferably, members of the appraisal team who reported on the deficiencies being addressed in the corrective plans will accomplish this.

Corrective Actions and Follow-up

After the final report has been distributed, OA-50 forwards ES&H findings, if any, to the Assistant Secretary for Environment, Safety and Health (EH). EH then enters this information into the CATS database. In accordance with DOE Order 470.2B, CSOs and DOE field elements are responsible for entering and updating corrective actions in the CATS. OA-50 monitors the progress of and validates corrective actions through subsequent appraisals and follow-up reviews.

APPENDIX A

MANAGEMENT SYSTEMS INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

APPENDIX A

MANAGEMENT SYSTEMS INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

The following provides an overview of the inspection criteria used and the activities typically performed to collect information that will be used to evaluate the guiding principles and implementation of integrated safety management (ISM). “Work activities,” as used herein, encompass all types of work, including projects, construction, decontamination and decommissioning, research and development (R&D), manufacturing, experiments, facility operations and maintenance, environmental restoration, sampling, and other work that could expose the workers, the public, or the environment to hazards. The results of Office of Independent Oversight and Performance Assurance (OA) environment, safety, and health (ES&H) inspection activities are periodically analyzed, and strengths and weaknesses are identified and provided in a lessons-learned report available at <http://www.oa.doe.gov/>.

Guiding Principle #1 Line Management Responsibility for Safety

Inspection Criteria: Policy and Expectations – Safety policies and goals, including ISM processes, are documented, and initiatives are in progress to improve ES&H programs and processes for ISM.

- Line management has developed a consistent and responsive ISM system description and has implementing mechanisms consistent with the system description at all organizational levels.
- Line management has established, and communicated to all levels of the organization, a set of well-defined ES&H policies and performance expectations consistent with ISM.
- Senior line management provides overall expectations for integrating safety into all operations, work activities, and facilities and ensures that its expectations are met through continuous monitoring.

Inspection Activities: Review recent changes to DOE/NNSA policies with safety implications. Interview DOE/NNSA management to determine adequacy of policy implementations at a site. Review site office, area office, and/or support center and contractor directives, procedures, instructions, and guidance. Interview U.S. Department of Energy (DOE) and contractor managers, subcontractors, supervisors, workers, and stakeholders. Review safety aspects of strategic plans, management goals, and performance results. Interview senior line managers to determine how their expectations are formulated, communicated, and monitored. Obtain information and coordinate information with that gathered by the topic team.

Inspection Lines of Inquiry:

- Are policies and expectations consistent with ISM established, communicated, and understood at all levels of the organization?

- Has improving ES&H been included as a strategic goal, and has ES&H been given proper senior management attention and assigned an appropriate level of priority in budgeting and in the performance evaluation process?
- Has the environmental protection program been integrated into the site's ISM system per DOE Order 450.1, *Environmental Protection Program*?

Inspection Criteria: Leadership – Line management demonstrates a commitment to protect the public, workers, and the environment. Line management proactively demonstrates a leadership position in guiding line organizations, contractors, subcontractors, and workers. Line management ensures that ES&H functions and activities are present at all levels of the organization and are integrated into all work activities, including projects and construction, programmatic and R&D activities, and facility operations and maintenance.

- Line management's commitment to safety has been clearly communicated and is evident in line managers practices and behavior.
- Line management has established an effective safety culture that permeates the entire organization and assures that safety is an integral part of every work activity and operation.
- Line management fosters a cooperative relationship between the area/site office, contractors, safety organizations, subcontractors, workers, and unions, so that ES&H and ISM are well integrated.
- Managers and supervisors at all levels accept, actively promote, and set an appropriate example for continuous improvement and the integration of safety into all site work activities.
- DOE Headquarters elements, the site/area office, and contractor management provide an effective level of leadership to ensure understanding and implementation of applicable elements of ISM by subcontractors and, where applicable, privatized or lessee workers.
- Line management has ensured that the elements of ISM, including the guiding principles and core functions, have been formally institutionalized into programs, processes, procedures, training, and other management controls.
- The area/site office and contractor senior management have provided effective direction for integrating safety into all facilities, activities, and work activities with an appropriate flowdown of ES&H policies into implementing processes, documents, and mechanisms, down to the working level.
- Management systems to collect and organize information and provide line managers with necessary insights are in place and are being used routinely.
- Line management has instituted a safety management system that provides for the integration of safety management processes, procedures, and/or programs into all work activities.

- Line management has established a process to ensure identification of risks and hazards associated with mission and support work activities, and that process ensures an appropriate allocation of resources to ES&H and an integrated approach by affected organizations.
- Line management has assured that the principles and core functions of ISM are applied appropriately and are an integral part of every activity.
- Effective management systems are in place to align safety issues, deficiencies, and commitments with business systems for planning, prioritizing, and budgeting.

Inspection Activities: Review site/area office and contractor directives, procedures, instructions, and guidance. Interview DOE and contractor managers, subcontractors, supervisors, workers, and stakeholders. Review the ISM system description, safety committee meeting minutes, and such documents as the site ES&H Manual to explore whether line management is committed to safety values and has put into place mechanisms that emphasize this commitment. Obtain information and coordinate information with that gathered by the topic team. Review safety aspects of strategic plans, performance goals, policy, and project documents. Interview DOE field element and contractor personnel, including project managers, to gain an understanding of how strategic plans and projects are implemented.

Inspection Lines of Inquiry:

- Has ES&H been appropriately considered in the prioritization and integration of projects, facility maintenance, construction, and operations?
- Do project plans serve as an effective management tool to plan, schedule, prioritize, address risk, and monitor project work?
- Are there adequate processes for integrating and incorporating safety at the facility and activity level?
- Has the integration of ES&H been appropriately considered in DOE field element and contractor ISM program and implementing documents?
- Does the most recent ISM system description adequately address all elements of ISM, including how ISM is flowed down to the working level? Is ISM adequately implemented for all site facilities and organizations, including subcontractors?
- Is commitment and ownership of ISM at all levels, including the upper management team, adequate? Is line management continually strengthening the implementation of ISM policy?
- Is line management identifying needed organizational and behavioral changes and providing leadership to achieve them?
- Does the site/area office and the contractor's strategic planning processes include ES&H as a strategic goal with an appropriate level of priority?

- Does the ISM process include appropriate involvement of stakeholders in the definition and implementation of safety management policies?
- Does management receive timely and accurate ES&H information, and is this information used for decision making?
- Are safety committees effective in providing input and assisting line management in dealing with ES&H concerns? Do committee charters clearly define the roles and responsibilities of safety committees and key personnel? Are the recommendations from safety committees acted upon by line management to resolve ES&H concerns and facilitate improvement?

Inspection Criteria: Worker Empowerment – Line managers ensure active participation by workers in work planning and control programs and in ES&H elements designed to protect the public, workers, and the environment.

- Workers, including applicable labor unions, are empowered effectively and are involved in safety, including participation in the development of safety policies, safety committees, prioritization of safety issues, and the implementation of ISM.
- All personnel are empowered and encouraged by line management to raise safety issues and to take appropriate action in response to hazards encountered during work activities or emergencies, including invoking the authority to refuse unsafe work assignments and stop unsafe work.
- Line management has established an employee concerns program to provide a mechanism for employees to raise ES&H concerns. These concerns are adequately solicited, tracked, prioritized, and responded to.
- Effective programs are in place to promote a safety-conscious culture and worker participation in ES&H management.

Inspection Activities: Review relevant processes and documents, such as the stop-work policy/procedure, and interview responsible site/area office and contractor line managers, Facility Representatives, supervisors, facility personnel, union representatives, subcontractors, and workers. Observe operations at the selected facilities to determine whether and how workers are involved in work planning and control tasks (e.g., hazards identification and control through pre-job briefings). Review DOE/NNSA and contractors' employee concerns programs. Conduct interviews to assess the performance of this program.

Inspection Lines of Inquiry:

- Are the stop-work policies and procedures adequate and effective? Is employee empowerment adequate and effective?
- Does the employee concerns program for site/area offices and the contractor resolve employee safety concerns effectively? Do employees receive timely and responsive feedback on submitted concerns?

- Do safety programs promote teamwork, improve safety culture (behavioral safety programs), and enhance interfaces to other contractors and subcontractors?
- Is worker involvement in the hazard identification and work planning processes adequate and mandated by procedures?
- Are existing programs effective in promoting a safety-conscious culture?
- Do workers and union representatives perceive worker empowerment to be effective? Is there any real or perceived fear of retaliation for raising safety concerns or stopping unsafe work activities?

Guiding Principle #2

Clear Roles and Responsibilities

Inspection Criteria: Clearly Defined Roles, Responsibilities, and Authorities – Line management has defined and documented clearly delineated roles, responsibilities, and authorities for ES&H that are maintained and provide a foundation for the effective integration of safety into sitewide operations. Functions, responsibilities, and authorities are defined, communicated, understood, and implemented for providing direction; defining the scope of work; analyzing hazards; developing and implementing hazard controls; performing work within controls; collecting feedback; and pursuing improvement.

- Roles, responsibilities, and authorities for ES&H (including ISM implementation and the control of all work activities and associated hazards) are clearly defined, documented, and understood by organizations and individuals at every level in the organization.
- Roles, responsibilities, and authorities for implementation of 10 CFR 830, Subpart B, are clearly defined, documented, and understood by organizations and individuals.
- Line management has implemented a process to ensure that ES&H and ISM responsibilities flow down from senior management to each person performing work.
- Line management has implemented processes to provide for the delegation of authority and documentation of organizational structures and interfaces throughout the line organization.
- Line management has clearly defined functional relationships and responsibilities among line, support, and oversight/assessment organizations.
- Line management has established clear roles, responsibilities, authorities, delegations, and interfaces between DOE Headquarters offices, site/area offices, contractors, and subcontractors, including coordination of line management direction from multiple program offices at a single site.
- Line management has established effective assignment of responsibilities and lines of internal and external communications for ES&H issues and performance.
- Responsibilities are clearly established for worker empowerment and stop-work authority.

Inspection Activities: Review any recent changes in functions and relationships between DOE/NNSA, site offices, support centers, and contractors. Review the site/area office and contractor directives, procedures, instructions, and guidance. Review planning documents, and interview DOE/NNSA and contractors' managers and staff to determine how institutional and facility-level roles and responsibilities interface with work authorization and execution roles and responsibilities and how well these interactions have been implemented. Interview DOE Headquarters, site/area office, contractor, and subcontractor personnel. Observe activities and coordinate information based on topic team inspection results relating to roles and responsibilities.

Inspection Lines of Inquiry:

- Have site organizations established and documented how the specific functions and responsibilities assigned to them are properly discharged?
- Have Headquarters and field element managers captured all field element managers' authorities as reflected in DOE Manual 411.1-1B, *Safety Management Functions, Responsibilities, and Authorities*, and are all authorities that are delegated by applicable Program Secretarial Officers captured by field elements?
- Are functions, responsibilities, and authorities documents kept up to date?
- Are interfaces between facilities and building managers and occupying organizations (tenants, users, lessees, subcontractors, etc.) defined and appropriately implemented? Do the interfaces clearly define roles, responsibilities, and authorities? Are approval authorities based on facility safety limits, configuration and change control processes, and facility services established?
- Has the responsibility for determining facility operating limits, based on hazards analysis processes, been assigned?
- Are the roles, responsibilities, and authorities of the building managers, individuals working within buildings, and work control personnel for authorizing and performing work been clearly assigned in accordance with approved procedures?
- Are the roles, responsibilities, and authorities of line managers and ES&H staff and the management chain clearly established and understood by individuals filling these positions?
- Are roles, responsibilities, and authorities integrated into work control procedures (e.g., project, construction, R&D, facility operations, and maintenance procedures) of facility and building managers, building organizations, ES&H support organizations, training managers, and those reporting to them?
- Are the roles and responsibilities for hazard identification and analysis adequately described in institutional and facility-level procedures? Are the roles and responsibilities of subject matter experts established?
- Are responsibilities clearly assigned to assure worker involvement in work planning?

- Are stop-work responsibilities and authorities clearly defined and communicated?

Inspection Criteria: Accountability for Performance – The DOE field element is held accountable for performance by DOE Headquarters program offices. Contractors and line managers are held accountable for safety performance through performance objectives and appraisal systems. Systems are in place to ensure accountability measured against assigned roles and responsibilities.

- The site/area office and contractor managers, supervisors, and workers are held accountable for ES&H performance through a combination of measuring milestones, positive reinforcement, and negative consequences for poor safety performance.
- The site/area office, contractor managers, and supervisors are held accountable for the timely and effective implementation of ISM, in accordance with their assigned responsibilities.
- Contractors and subcontractors are held accountable for ES&H performance through appropriate contractual and appraisal mechanisms, contracts, and contractor performance reviews.

Inspection Activities: Effectiveness of steps to establish accountability will be evaluated through reviewing relevant processes, such as the annual appraisal process; reviewing documents defining performance standards for organizations and individuals; and interviewing site/area office, contractor, and subcontractors' managers and staff. Conduct interviews with DOE/NNSA and contractors' business organizations, subject matter experts, and individuals responsible for assuring that ISM requirements are appropriately incorporated into subcontractor activities and that those activities are monitored for safety performance.

Inspection Lines of Inquiry:

- Does the site/area office and contractor performance evaluation process assure that appropriate measures for ES&H performance are incorporated?
- Are personnel at all organization levels, including DOE, held accountable for assigned ES&H roles and responsibilities?
- Is there an effective formal process for resolving conflict between operations, program management, and functional support organizations?
- Does the structure, agenda, minutes, and outcome of regularly scheduled coordination meetings among upper managers allow for personnel accountability? Are the meetings used to hold personnel accountable?
- Are subcontractors held accountable for ES&H performance through established and meaningful performance measures?
- Are site/area office, contractor and subcontractor managers, supervisors, and workers held accountable for ES&H performance?

- Does line management use performance metrics and feedback processes effectively to hold organizations and individuals accountable for ES&H performance?

Guiding Principle #3
Competence Commensurate with Responsibilities

Inspection Criteria: Staffing and Qualifications – Staffing and qualifications are adequate, and line managers and staff demonstrate a good understanding of programs and facilities.

- Line management has analyzed and documented the appropriate levels of staffing, education, experience, and training for each function, including the consideration of responsibilities, mission, specific work activities, hazards, risks, and schedules.
- Line management has identified critical skills and implemented short-term and long-term strategies for recruiting and retaining a competent workforce.
- Line management has implemented the level of control necessary to maintain adequate levels of management and staff resources and technical expertise.
- Effective management processes and controls are in place to assure that site/area office personnel, contractors, subcontractors, privatized workers, lessees, and visitors are adequately trained and/or qualified on job tasks, site and job hazards, risk, and applicable requirements.
- Effective processes are in place to assure that personnel involved in implementation of 10 CFR 830, Subpart B, receive training commensurate with responsibility.

Inspection Activities: Review appropriate site/area office, contractor, and subcontractor directives, procedures, instructions, and guidance. Review training records and documentation for selected site/area office, contractor, and subcontractor personnel. Determine whether schedules for training and retraining are developed and implemented, and whether they are consistent with site and facility training requirements.

Inspection Lines of Inquiry:

- Are appropriate levels of qualified staff available to support safe operations?
- Is the process to address short- and long-term staffing needs effective?
- Are core competencies recognized and maintained in relation to changing site mission, work site hazards, and non-routine occurrences?
- Are strategic staffing needs integrated effectively into staffing decisions?
- Are recruiting policies and implementation strategies effective in attracting and retaining personnel with needed managerial, technical, and operational expertise and experience?

Inspection Criteria: Technical Competence – Workers and managers are technically competent to perform jobs they are responsible for and are appropriately educated, experienced, and knowledgeable of procedures, facilities and equipment, hazards, and risks.

- Line management demonstrates support to personnel in attaining and maintaining technical qualifications commensurate with assigned responsibilities.
- Line managers, supervisors, workers, and ES&H support staff demonstrate technical competence and understanding of programs, requirements, facilities, and equipment within assigned areas of responsibility.
- Management systems are in place to assure that managers, supervisors, and workers are knowledgeable of the hazards and ES&H requirements associated with their responsibilities and work, including training requirements.
- Line managers, supervisors, workers, and ES&H support staff at all levels of the DOE and contractor organizations demonstrate an understanding of and competency in ISM.
- Subcontractor organizations have knowledge of ISM, and this knowledge is required by their subcontracts.
- Mechanisms are in place to assure understanding, awareness, and competence in response to changes in job assignments, procedures, hazards, systems design, and facility mission.
- Mechanisms are in place to assure that subcontractors performing work on behalf of DOE are competent to perform work in accordance with their contract, laws and regulations, and applicable site requirements.

Inspection Activities: Review appropriate site/area office and contractor procedures, guidance, and facility-specific procedures. Perform selected interviews with workers, supervisors, ES&H representatives, Facility Representatives, training personnel, subject matter experts, etc. Solicit feedback from the Topic Team on site/area office, contractor, and subcontractor personnel technical competence and understanding of programs and facilities.

Inspection Lines of Inquiry:

- Is a process established and implemented for attainment and maintenance of competence commensurate with responsibilities (CCR)?
- Have personnel who have been assigned responsibilities for review and approval of processes associated with implementation of 10 CFR 830, Subpart B, received adequate training, such as unreviewed safety question (USQ) training?
- Is a process established and implemented that ensures CCR for meeting 10 CFR 830, Subpart B, requirements through appropriate courses, such as USQ training?

- Is CCR ensured before assigning responsibilities to DOE, contractors, and subcontractors?
- When facility conditions change, are personnel qualification requirements and training plans reviewed and changed as necessary?
- Does line management provide resources, allow work time for training, and hold workers accountable for meeting training requirements? Do subcontracting organizations verify workers' qualifications and provide the contractor with qualified workers?
- Is training based upon a systematic and graded approach that is commensurate with the risk and complexity of tasks and the knowledge and skills required for job performance?
- Are key indicators of worker and operating performance and lessons learned used to revise training programs to ensure that workers are meeting established performance and safety goals?
- Is technical training periodically reviewed and evaluated for content, delivery, cost-effectiveness, and adherence to learning objectives?
- Are job-specific requirements (and/or hazards) incorporated into training activities as changes in job tasks occur?

Guiding Principle #4 Balanced Priorities

Inspection Criteria: Translate Mission into Work, Set Expectations – Line management ensures that DOE and its contractors have and use defined mechanisms to define the scope (mission), schedule, and resources (personnel and cost of work) for work processes and to ensure that associated risks and hazards are properly addressed.

- DOE and the contractor have prioritized ES&H and ISM and have committed sufficient attention and resources accordingly.
- Line management effectively integrates ES&H into all applicable project plans and work processes.
- Line management actively involves workers, regulators, and stakeholders to ensure an appropriate balance between mission objectives and protection of the workers, the public, and the environment.
- Line management has formal processes for the development of scope, schedule, and cost to safely achieve site mission expectations. A well-defined work planning process for all types of work is in place and embraces the core functions of ISM.
- The allocation of ES&H resources for facility and programmatic work activities is commensurate with the importance of the work and the complexity, potential risks, and hazards associated with the work.

Inspection Activities: Review appropriate DOE field element and contractor directives, strategic plans, procedures, instructions, and guidance. Review subcontractor contracts and procedures, as needed.

Interview DOE, contractor, subcontractor (as needed), and project personnel. Meet with stakeholders and review communications, including any correspondence between DOE and stakeholders.

Inspection Lines of Inquiry:

- Does the field element manager approve the updated performance objectives, performance measures, and commitments made by the contractor and ensure that they reflect current mission requirements and promote a balance between mission and safety?
- Do budget processes ensure that an appropriate level of ES&H resources is incorporated in project plans as well as routine facility and programmatic work?
- Do contracts prepared by the field element manager establish clear expectations and performance measures for both mission and ES&H?
- Does management prioritize and allocate resources effectively to address ES&H, programmatic, and facility operations/maintenance considerations?
- Are processes, such as Readiness in Technical Base and Facilities, in place and used to ensure that an adequate level of resources is available to support the safe operation and maintenance of mission-related facilities?
- Are effective institutional facility condition assessments performed to support appropriate asset management?
- Has the DOE field element clearly conveyed ES&H expectations and priorities to the contractor?
- Has contractor line management assessed the adequacy of processes and process implementation activities for translating mission into work at the site level, and do these processes appropriately consider ES&H?
- Has DOE field element management and the contractor met with stakeholders and appropriately considered their input on matters related to mission objectives and protection of workers, the public, and the environment?

Inspection Criteria: Provide for Integration – ES&H functions and activities are integrated into all work activities, including projects and construction, programmatic and R&D activities, and facility operations and maintenance, and are present at all levels of the organization.

- Line management has instituted a safety management system that provides for the integration of safety management processes, procedures, and/or programs into all work activities.
- Line management has established a process to ensure identification of risks and hazards associated with mission and support work activities, and that process ensures an appropriate allocation of resources to ES&H and an integrated approach by affected organizations.

- Line management has assured that the principles and core functions of ISM are applied appropriately and are an integral part of every activity.
- Effective management systems are in place to link safety issues, deficiencies, and commitments to business systems for planning, prioritizing, and budgeting.

Inspection Activities: Review strategic plans, performance goals, policy, and project documents. Interview DOE field element and contractor personnel, including project managers, to gain an understanding of how strategic plans and projects are implemented.

Inspection Lines of Inquiry:

- Has ES&H been appropriately considered in the prioritization and integration of projects, facility maintenance, construction, and operations?
- Do project plans serve as an effective management tool to plan, schedule, prioritize, address risk, and monitor project work?
- Are there adequate processes for integrating and incorporating safety at the facility and activity levels?
- Has the integration of ES&H been appropriately considered in DOE field element and contractor ISM program and implementing documents?
- Do implementing procedures adequately address how ES&H is integrated in various work activities, and how a balance between mission and safety is achieved?
- Has the listing of unfunded activities for the facilities selected been adequately evaluated and analyzed to ensure that the lack of funding does not have an adverse ES&H effect on workers, the public, or the environment?

Guiding Principle #5
Identification of Standards and Requirements

Inspection Criteria: The site/area office and contractor have formal processes for identifying and communicating requirements to the contractor, and are monitoring the implementation of all applicable Federal, state, local, and DOE requirements by the contractor and other site contractors and subcontractors. The requirement basis is proactively managed, and required changes are implemented in a timely manner.

- The site/area office has established a formal requirements management process and has specified a comprehensive set of safety requirements consistent with laws, regulations, and DOE orders. The requirement basis is adequate for the mission and scope of work performed at the selected facilities (and the site).
- Formal processes and procedures are in place, are adequate for maintaining the contract current, and ensure that contracts are updated to require compliance with new and revised requirements.

- The requirements management process is linked and/or integrated with requirements in authorization basis and other safety documents or equivalent safety envelopes.
- Formal processes are in place that regularly assess the effectiveness of the requirements management process and ensure that they are adequately used.
- Formal procedures are in place for reviewing draft requirements and new or changed requirements.
- Processes are established for flowdown of contractual requirements through policies, directives, procedures, health and safety plans, etc., and appropriate training and qualification requirements are included.
- The contractor(s) and subcontractors are effectively implementing contract requirements.

Inspection Activities: Verify through interviews with DOE/NNSA and contractors' line managers and staff and through review of such documents as standards/requirements identification documents, work smart standards, ES&H Manuals, self-assessments, and audits that the processes used by the site/area office and the contractor for identification of standards and requirements are systematic and comprehensive and ensure that appropriate requirements are included in the contractor and subcontractor contracts and that those requirements are implemented effectively at facility and task levels and have adequate DOE oversight.

Inspection Lines of Inquiry:

- Are formal requirement and directive management procedures established? Are they adequate, maintained current, and used effectively?
- Is the contract requirement listing complete, and are requirements appropriately flowed down through institutional, facility, and working-level procedures to all organizations and into subcontracts?
- Does the requirement management basis adequately encompass the scope of work performed by the contractor and subcontractors?
- Is the site/area office and contractor directive management process adequate to identify and incorporate new requirements and changes to previously incorporated requirements?
- Does the site/area office maintain appropriate justification and documentation to support exceptions to requirements, and are those exemptions approved at appropriate levels?
- Are implementation time frames for changes to requirements that affect safety established and appropriate?
- Does a selected sample of requirement documents for subcontractors, health and safety plans, activity/job hazards analyses, work documents, and procedures indicate adequate flowdown of DOE and external requirements? (Coordinate this review with the topic team.)

- Do procurement procedures for the acquisition of goods and services assure compliance with applicable ES&H requirements?
- Are work documents and procedures utilized for development and approval of authorization basis documents for nuclear facilities and operations consistent with 10 CFR 830, Subpart B, requirements?
- Is training for individuals involved in the development and review of documented safety analyses and the implementation of the USQ process consistent with 10 CFR 830, Subpart B, requirements? (Coordinate this review with the essential systems functionality [ESF] review team.)
- Are self-assessments and site office oversight of directives and requirements management effective in identifying and correcting deficient conditions? (Coordinate this review with the review of Core Function #5.)
- Is the guidance and direction provided for implementation of 10 CFR 830, Subpart B, requirements consistent with the requirements and facilitating appropriate implementation? (Coordinate this review with ESF team members.)

APPENDIX B

CORE FUNCTION #5

FEEDBACK AND CONTINUOUS IMPROVEMENT INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

APPENDIX B

CORE FUNCTION #5 FEEDBACK AND CONTINUOUS IMPROVEMENT INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

The following provides an overview of the inspection criteria used and the activities typically performed to collect information that will be used to evaluate the guiding principles and implementation of integrated safety management (ISM). “Work activities,” as used herein, encompass all types of work, including projects, construction, decontamination and decommissioning, research and development, experiments, facility operations and maintenance, manufacturing, and other work that could expose the workers, the public, or the environment to hazards. The results of Office of Independent Oversight and Performance Assurance (OA) environment, safety, and health (ES&H) inspection activities are periodically analyzed, and strengths and weaknesses are identified and provided in a lessons-learned report available at <http://www.oa.doe.gov/>.

Inspection Criteria: Assessment and Performance Measurement – Line management has established formal mechanisms and processes for collecting both qualitative and quantitative information on ES&H performance. This information is collected and used effectively as the basis for informed management decisions to improve safety performance through assessments, performance measures, and other feedback mechanisms. Line management oversight of ES&H is in accordance with the policy as well as key elements outlined in U.S. Department of Energy (DOE) Policy 450.5, *Line Environment, Safety and Health Oversight*.

- DOE line management has established effective, performance-based processes for monitoring and assessing contractor ISM and ES&H performance, providing feedback, and holding the contractor accountable for correction of deficiencies and effective performance.
- Assessment program elements include independent and management assessments, assessment of work processes and performance, performance-based observation of work activities, and evaluation of crosscutting ES&H issues and programs.
- Line managers have implemented processes to develop, execute, and track performance measures, including the safety measures associated with work performance. Approved performance measures are clearly linked to the performance objectives and expectations established by management and provide information that indicates how safely work is being performed.

Inspection Criteria: Lessons Learned – Line management has established formal methods to identify deficiencies and noteworthy practices with generic applicability, disseminate these lessons learned within and across organizations, and incorporate them into procedures and work control documents for subsequent work activities.

- Line management has established processes to solicit pre-job and post-job feedback from workers, managers, and ES&H professionals on the effectiveness of work definition, hazards analyses, and controls and implementation for all types of work activities.

- Processes are in place to assure that events and accidents are promptly and thoroughly reported and investigated, including the identification and resolution of root causes and management and programmatic weaknesses, and the distribution of lessons learned.
- Processes are in place to identify applicable lessons learned and any necessary corrective and preventive actions, to disseminate lessons learned to targeted audiences, and to ensure that lessons learned are understood and applied.

Inspection Criteria: Corrective Action and Issues Management – Line management has established a formal process to capture, evaluate, and track to resolution ES&H-related issues and deficiencies and associated corrective actions. Line management has executed graded mechanisms, such as independent verification and performance-based evaluations to ensure that corrective actions and recurrence controls are timely, complete, and effective.

- Line management analyzes deficiencies to determine root cause and generic applicability, and implements measures necessary to prevent recurrence.
- Closure of deficiencies and corrective actions is based on objective, technically sound, and verified evidence.
- Line management receives periodic information on the status of identified deficiencies and corrective actions and holds organizations and individuals accountable for timely and effective completion of actions.

Inspection Activities: Review appropriate site/area office and contractor directives, policies, procedures, instructions, and guidance. Review assessment schedules for management, independent, and self-assessments. Review assessment adequacy in coordination with the topic team in selected functional areas. Interview managers and staff at the site/area office (program staff, Facility Representatives, and Technical Representative Safety and Health Team staff), contractors, and subcontractors to determine how management, self-, and independent assessments are accomplished and how they are used to improve ES&H performance. Interview lessons-learned coordinators and evaluate lessons-learned program documentation, including procedures and records, to determine the formality and implementation of these programs. Review documentation related to deficiencies (e.g., procedures, completed assessments, employee concerns, occurrence reports, open-item lists, corrective actions, and verification/validation records).

Inspection Lines of Inquiry – Assessment and Performance Measurement:

- Does the field element manager monitor contractor performance and assess whether performance expectations are met? Are managers, supervisors, and workers held accountable for performance assurance activities?
- Are procedures and or mechanisms in place that require effective day-to-day operational oversight of contractor activities through Facility Representatives?
- Are procedures and/or mechanisms in place for self-assessment of the DOE site organization to identify areas in which continuous improvement in safety of operations can be realized?

- Does line management observe the activities of their workforce to ensure that activity, facility, and institutional expectations are met? This includes assessing results, identifying process improvements, taking effective corrective actions, and sharing lessons learned.
- Are assessments conducted to determine program effectiveness and assure continuous improvement, and to collectively analyze trends and identify systematic problems?
- Are institutional and facility self-assessment activities scheduled and conducted to evaluate work activities and functional areas to improve and correct performance?
- Are uniform performance indicators, as well as mechanisms for collection of the performance indicator data, established and used?
- Are periodic independent assessments, which include evaluations of performance assurance effectiveness, performed? Have organizational self-assessment plans been established, and are self-assessments being conducted effectively?
- Has supporting documentation for assessment and performance monitoring processes (e.g., plans, charters, procedures, schedules, minutes, reports, and correspondence) been completed with adequate scope, frequency, and thoroughness?

Inspection Lines of Inquiry – Lessons Learned:

- Are procedures and/or mechanisms in place to examine the findings of internal and external assessments to identify root causes, trends, and necessary corrective actions, including processes for tracking, trending, and correcting conditions adverse to quality?
- Are trends, lessons learned, and systemic problems routinely identified and analyzed? Are the results reviewed with responsible management for appropriate improvement initiatives? Are issues identified and reported to responsible management for corrective action?
- Are lessons from operating experience within and outside the contractor organization developed and communicated for use in work planning and performance?
- Do committee meetings (e.g., safety committees, lessons-learned committees, etc.) provide effective feedback? Are committees reviewing performance, analyzing data for lessons learned, and assigning action items for improvement?
- Are both internally and externally generated lessons learned reviewed for applicability, and are corrective/preventive actions developed and implemented?
- Are lessons learned, including near-miss information and post-job reviews, consistently and appropriately incorporated into subsequent training and work documents, as well as the work control process?

Inspection Lines of Inquiry – Corrective Action and Issues Management:

- Are processes and procedures in place and used by line management, facilities, and organizations to identify and promptly correct problems to ensure adherence to performance requirements?
- Has an issues management process that allows management to collectively analyze and manage all organizational deficiencies and corrective actions been established and implemented effectively?
- Are all organizations and departments using the issues management process with consistent thresholds for risk-ranking issues?
- Is a process established for reviewing and ensuring the adequacy of occurrence reports and for approving corrective action reports/plans?
- Are process improvements and corrective actions planned, implemented, and evaluated for effectiveness?
- Is issue capture, evaluation, tracking, and closure and the specified corrective actions to prevent recurrence adequate, including the extent of condition and root cause determinations?
- Are lower-level deficiencies, which may be precursors to more serious issues, documented, and tracked?

APPENDIX C

CORE FUNCTIONS (1-4) INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

APPENDIX C

CORE FUNCTIONS (1-4) INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

The following provides an overview of the inspection criteria used and the activities typically performed to collect information that will be used to evaluate the core functions and implementation of integrated safety management (ISM). “Work activities,” as used herein, encompass all types of work, including projects, construction, decontamination and decommissioning (D&D), research and development (R&D), experiments, facility operations and maintenance, manufacturing, and other work that could expose the workers, the public, or the environment to hazards. The results of Office of Independent Oversight and Performance Assurance (OA) environment, safety, and health (ES&H) inspection activities are periodically analyzed, and strengths and weaknesses are identified and provided in a lessons-learned report available at <http://www.oa.doe.gov/>.

Core Function #1 Define the Scope of Work

Inspection Criteria: Line management ensures that the site/area office and contractor have and use defined mechanisms to define the scope, schedule, and cost of work and to identify and communicate associated risks and hazards.

Inspection Activities: Evaluate the involvement of the site/area office managers, Facility Representatives, and subject matter experts in the planning, review, and approval of work definition for site, facility, and building work activities.

Inspection Lines of Inquiry:

- Are U.S. Department of Energy (DOE) managers actively involved in the definition of projects and allocation of resources?
- Is the DOE oversight of project and work definition commensurate with the level of complexity and hazards?
- Do Facility Representatives ensure that defined work in facilities/buildings is consistent with activities allowed by safety basis documents?

Inspection Criteria: Work control systems and procedures that address work definition are developed for all types of work activities and are implemented effectively. These systems and procedures ensure that the scope of all work is clearly defined and bounded such that the hazards to workers, the public, and the environment can be identified and controlled.

Inspection Activities: Review contractor requirements, implementing procedures, guidance, and facility-specific procedures governing work control processes. Walkthrough automated work planning systems with

users. Review procedures and processes for prioritizing work. Review planned and in-progress work and corresponding technical work documents. Interview individuals responsible for the preparation of authorization agreements, authorization basis documents, contracts, project plans, procedures, work packages, work plans, and other documents that define the scope of the work.

Inspection Lines of Inquiry:

- Do site, facility authorization basis documents, and safety envelopes adequately bound the scope of work defined in the work orders, procedures, and/or instructions? Does the work definition process include a screening against the authorization basis documents' safety envelope and/or permits?
- Have higher-level work documents, such as project plans, been translated into discrete work packages and procedures with well-defined boundaries and interfaces?
- Is work defined at the task level such that the individuals performing the work, supervisors, planners, and appropriate ES&H personnel can readily identify the hazards and risks associated with both the work activity and the environment/location in which it is performed?
- Are work activities properly prioritized to allow adequate allocation of resources and scheduling based on the importance of the work, safety impact, and risk?
- Have adequate personnel and equipment resources been identified for the performance of work, including facility operations and routine maintenance?
- Do work-planning processes provide for early involvement of workers, and safety and health personnel, to fully define the work to allow identification of hazards?
- For R&D, experiments, projects, and modifications, are plans complete with adequate procedures, instructions, and drawings to define the work/activity?

Core Function #2 Analyze the Hazards

Inspection Criteria: Work systems and procedures are developed and implemented effectively and ensure that hazards for all work are identified and appropriately analyzed, based on the significance of the hazard. Prior to the initiation of work, line management identifies, analyzes, and categorizes the hazards associated with the work activity so that the appropriate administrative and engineering controls can be put in place to prevent or mitigate those hazards.

Inspection Activities: Review work planning and control processes and implementing procedures. Review processes used to identify and analyze the hazards associated with facilities, projects, and work activities. Interview work planners, subject matter experts, and ES&H personnel. Review project plans, procedures, work packages, work plans, and corresponding hazard identification and analysis documents, such as authorization basis documents, facility safety envelopes, safety plans, job safety analyses, activity hazards analyses, health and safety plans, and other such documents. Review workplace hazard baseline surveys, exposure monitoring data, and radiation protection surveys. Review processes for evaluating the hazards associated with changes to work scopes.

Inspection Lines of Inquiry:

- Do institutional-level ES&H procedures address the hazards analysis process at the working level, and are the procedures properly implemented?
- Has line management continually analyzed the hazards, vulnerabilities, and risks associated with facilities as they cycle through the phases of design, construction, operation and maintenance, and D&D activities?
- Are authorization basis documents (including a documented safety analysis) developed and approved in accordance with 10 CFR 830, Subpart B, and site procedures?
- Are unreviewed safety question screenings, determinations, and evaluations performed consistent with regulations and site/facility procedures?
- Are standardized hazards assessment processes developed and graded in their approach based on the complexity and risk of the activity/work, performance frequency, and initial hazard screenings?
- Are thresholds identified within the hazards analysis process to trigger appropriate involvement of ES&H professionals?
- Do the hazards analysis processes address all types of activities (e.g., project/construction, programmatic/R&D, experiments, manufacturing, D&D, testing, sampling, and facility operations and maintenance)?
- Do formal procedures guide the development of activity-level hazards analyses, such as job safety analyses (JSAs), job hazards analyses (JHAs), health and safety plans (HASPs), and activity hazards analyses (AHAs), and ensure that the hazards analyses are tailored to the specific work being performed?
- Are the results of hazards assessment documents (i.e., identified controls) integrated into technical work documents and work procedures?
- Do work control processes assure that hazards assessments are reviewed for impact when work scope and technical work document tasks are changed?
- Do planners, workers, ES&H staff, and facility management personnel walkdown work sites to identify activity-related hazards and co-located hazards, based on the risk associated with the activity?
- Are specific thresholds identified for involvement of ES&H personnel in the work control and hazards analysis processes when conditions change so that new potential hazards can be analyzed?

Inspection Activities: Perform facility/building walkdowns. Visit work sites and observe selected work activities, including sampling of construction, R&D, D&D, production, manufacturing, facility operations and maintenance, subcontracted work, and experiments, as appropriate. Review the work documents and hazards analysis documents associated with observed work activities.

Inspection Lines of Inquiry:

- Are hazards analysis documents in place for facilities, operations, and observed work activities?
- Have all hazards associated with work activities been identified and analyzed? Are hazards analyses sufficiently detailed to identify appropriate controls?
- Have hazards that are significant and/or unique to particular work activities been clearly identified and documented?
- Are hazards adequately communicated to all workers and subcontractors by way of work packages, procedures, instructions, permits, postings, training, and pre-job briefings?
- Are current/controlled documents, drawings, surveys, and other data used in hazards analyses?
- Are the hazards analysis documents reviewed for impacts when work scopes and work documents are changed?
- Have facility hazards been identified and characterized for current conditions and operations?

Core Function #3 Develop and Implement Hazard Controls

Inspection Criteria: Management systems for work control are developed and implemented effectively for work activities and ensure the development of adequate hazard controls for safely performing the work.

Inspection Criteria: Line management has established processes for identifying and tailoring controls for hazards associated with all facilities, operations, and work activities.

Inspection Criteria: Hazard controls are established based on the understanding of the hazards, vulnerabilities, and risks in the work environment (e.g., nuclear, radiological, chemical, industrial, physical, and natural phenomena).

Inspection Activities: Review work planning and control processes and procedures. Review processes and procedures for the identification of controls. Interview project personnel, work control managers, foremen, technicians, crafts, supervisors, principal investigators, operations personnel, workers, and ES&H subject matter experts as applicable.

Inspection Lines of Inquiry:

- Are standardized hazard controls developed and used in a graded approach based on project/work complexity and risk, performance frequency, and initial hazard screenings?
- Are the types of controls (engineering, administrative, and personal protection equipment) applied in the correct sequence?

- Are the hazard controls comprehensive and adequate for maintaining planning efficiency while ensuring hazard mitigation?
- Are corresponding training requirements incorporated into controls and hazards assessments?
- Are thresholds identified for involvement of ES&H professionals in the tailoring of hazard controls?
- Are workers'/supervisors' stop-work authority and responsibilities clearly defined for unexpected hazards or safety concerns?
- Do procedures address liaisons and interfaces between facility management, tenants/users, and subcontractors to ensure that conflicts and overlapping work activities are properly coordinated and resolved?
- Is an independent safety review of the adequacy of controls provided for higher-hazard activities?

Inspection Activities: For facilities, review selected technical safety requirements, permits, procedures, or other documents that specify facility-specific hazard controls. Review logs, records, or other documents utilized to verify that facility-specific controls are in place and functioning. Conduct walkthroughs of facilities to observe controls for such hazards as postings, barriers, configuration, and limits. For projects and work activities, review hazard control plans, work documents, permits, and monitoring documents. Observe work activities and review work documents to verify that controls appropriate for the hazards and consistent with requirements are specified and properly implemented.

Inspection Lines of Inquiry:

- For nuclear facilities, are technical safety requirements and implementing procedures clear, with adequately defined limits and actions?
- Are parameters clearly defined and established in appropriate facility procedures, facility tenant agreements, and hazard controls for ensuring that authorization basis, facility, and other operating limits are not exceeded?
- Have authorization bases and facility safety requirements been clearly translated into facility-, building-, system-, and equipment-specific information that is available and usable by workers within the facility?
- Are approved final hazard controls from authorization basis documents and hazards analyses (JSAs, JHAs, AHAs, and HASPs) included in approved work documents, and are they adequately implemented?
- Are standardized hazard controls developed and used on a graded approach that considers work complexity, performance frequency, and the magnitude of the hazards?
- Are work documents complete with adequate procedures, instructions, and/or drawings, and are bounding conditions and limitations clearly specified?

- Are permits appropriately specified and integrated into the work package (lockout/tagout, radiation work permit, confined space, hot work, energized electrical, elevated work, etc.)?
- Is the reliability of hazard controls for higher-risk activities assessed, and are failure consequences determined and considered?
- When project/work scope and tasks are changed, are the hazard controls reviewed for impacts?
- Are personnel qualified and trained to perform the work in accordance with established controls?
- Are appropriate analytical parameters included in sampling and analysis programs?

Inspection Activities: Interview facility managers, team leaders, project managers, facility organizations, workers, R&D personnel, and ES&H personnel. Interviews are normally conducted informally in conjunction with observed work activities.

Inspection Lines of Inquiry:

- Are workers and appropriate safety professionals included on planning teams and involved in hazard control development? Are minimum thresholds identified that require involvement of ES&H personnel and subject matter experts based on the hazards and risk when developing work packages and during work activities?
- Do environmental and operations personnel have an adequate understanding of each other's requirements and processes to minimize environmental impacts and meet regulatory requirements?

Core Function #4
Perform Work Within Controls

Inspection Criteria: Line management ensures that work is safely performed and managed in accordance with requirements and safety management performance expectations. Contractors and subcontractors execute defined requirements such that employees are protected from adverse consequences.

Inspection Criteria: Line management has established and implemented processes to confirm that a facility or work activity, as well as the workforce, are in an adequate state of readiness before authorizing the performance of work.

Inspection Criteria: Line management ensures that all operations are authorized at a level commensurate with the hazards and has established work authorization processes for site, facility, and activity-level operations.

Inspection Activities: Review site/area office procedures for reviewing and authorizing work activities. Interview site/area office Facility Representatives and ES&H subject matter experts.

Inspection Lines of Inquiry:

- Has the site/area office established a systematic approach to authorizing work, including projects, start-up of processes and facilities, R&D activities, construction, and operations?
- Are there formal procedures and criteria to address site/area office involvement in work authorization (such as readiness reviews and operations startup), and is the criteria appropriately based on the hazards and risk of the activity?
- Does the site/area office process ensure that readiness is adequately verified and documented prior to authorizing new work or significant changes to ongoing work?
- Are Facility Representatives and ES&H representatives actively involved in the observation of work activities?

Inspection Activities: Review, observe, and evaluate processes for authorization of work, including written plans of the day/week, scheduling meetings, morning meetings, readiness reviews, work schedules, and other mechanisms used to approve, authorize, and release work.

Inspection Lines of Inquiry:

- Are work activities formally scheduled on the plan of the day or equivalent mechanisms to facilitate notification to affected personnel, resolution of scheduling conflicts, identification of resources and support required, prioritization with other work, and availability of required facilities and systems?
- Are pre-job briefings effective in communicating work scope, prerequisites (including training), and permit requirements to all workers? Are job-specific and area hazards adequately communicated to all workers before the start of work?
- Is there an effective process that defines the interface requirements between the facility managers, building managers, tenants, users, support organizations, and the facility maintenance organization to ensure that defined work does not overlap and cause conflicts?
- Does the work approval and authorization process define appropriate mechanisms to address significant changes in work scope or method of completion once initial approval is obtained?
- Have work activities and projects, including environmental protection activities, been properly planned, reviewed, and authorized?
- Are methods for authorizing work and readiness to perform work formal and documented?

Inspection Activities: Observe work activities. Review associated work documents for adequacy and proper authorization. Emphasize watching workers perform work using work documents and procedures consistent with specified controls.

Inspection Lines of Inquiry:

- Is proper authorization obtained to perform the work (work or work package approval)? Is authorization obtained immediately prior to the start of work (work release – facility/building conditions adequate to start work)?
- Is the work performed consistent with the defined work scope and limitations?
- Are all precautions and prerequisites met, including facility/system configurations, hazard controls, and other conditions?
- Are training requirements and pre-job briefings completed and adequate for authorized work activities?
- Is there periodic and adequate supervision of activities, based on the risk of the work activity? Is the supervisor's span of control adequate based on the complexity of the work, the hazards, and the number of concurrent jobs being supervised?
- Do personnel adhere to work control documents, procedures, and permits, including working within defined scopes, instructions, and hazard controls, and completing required documentation?
- Are workers knowledgeable of activity/project-level instructions and competent to perform the work as described in the work documents?
- Is equipment placed in a safe condition at the end of the work activity or work shift, or properly turned over to the next shift?
- Do workers/supervisors stop activities when tasks cannot be performed as prescribed by work control documents or when safety concerns are encountered? Do workers understand their stop-work authority and responsibility?
- Are mission/production (production over safety) pressures evident during the observation of work? Do these pressures have the potential to lead to unsafe practices or a failure to follow required controls?
- Are ongoing surveys conducted to ensure that work hazards are not changing and that work controls remain effective?
- Do all personnel comply with postings, barriers, limits, sampling and monitoring requirements, stop-work limits, and personal protective equipment requirements?
- Are hazard controls effective in their ability to maintain releases to the environment as low as reasonably achievable?
- Are the environmental impacts of operations and activities properly monitored and measured?

APPENDIX D

ESSENTIAL SYSTEMS FUNCTIONALITY REVIEW INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

APPENDIX D

ESSENTIAL SYSTEMS FUNCTIONALITY REVIEW INSPECTION CRITERIA, ACTIVITIES, AND LINES OF INQUIRY

The following provides an overview of the inspection criteria used and the activities typically performed to collect information that will be used to evaluate the ability of essential safety systems to perform their intended function in protecting the workers, the public and the environment from hazards. The criteria, activities, and lines of inquiry are based on inspection of nuclear facility safety systems and are tailored for non-nuclear hazardous facilities, based on the system and hazards. The results of Office of Independent Oversight and Performance Assurance (OA) environment, safety, and health (ES&H) inspection activities are periodically analyzed, and strengths and weaknesses are identified and provided in a lessons-learned report available at <http://www.oa.doe.gov/>.

Engineering/Configuration Management

Inspection Criteria: Technical, functional, and performance requirements for the system, as discussed or referenced in the facility authorization basis documents, are documented and maintained. Safety/authorization basis documents identify and describe the system safety functions.

Inspection Activities: Review the appropriate safety basis documents. Selectively review the installation of system components.

Inspection Lines of Inquiry:

- Do authorization basis documents identify and describe the system safety functions?
- Does the definition/description of the safety functions of the system include:
 - The specific role of the system in detecting, preventing, or mitigating analyzed events?
 - The associated conditions and assumptions concerning system performance?
 - The system requirements and performance criteria for the system and active components that are relied upon in the hazards or accident analysis, including essential supporting systems for normal, abnormal, and accident conditions?

Inspection Criteria: Changes to system requirements, documents, and installed components are designed, reviewed, approved, implemented, tested, and documented in accordance with formally controlled procedures. Changes to the system requirements, documents, and installed components conform to the approved safety basis for the facility; the appropriate change approval authority is determined; and consistency is maintained among system requirements and performance criteria, installed system equipment and components, and associated documents.

Inspection Activities: Selectively walkdown system equipment and components, and compare the actual physical installation of the system to documentation of the system design and safety basis.

Inspection Lines of Inquiry:

- Are materials and installation of system components consistent with the requirements and performance criteria for the system?
- Are applicable regulations, U.S. Department of Energy (DOE) directives, and industry standards (such as applicable National Fire Protection Association and American National Standards Institute standards) incorporated into the program?
- Does the site quality assurance/control program govern the specification, purchase, inspection, acceptance testing, and maintenance of components, and does the program comply with DOE Order 414.1A, *Quality Assurance*?
- Are system components properly labeled to assure proper configuration and operation?
- Do any identified discrepancies potentially impact (1) the operability or reliability of the system, or (2) the adequacy of the change control or document control processes applied to the system (e.g., presence of unauthorized changes or failure to properly document authorized changes)?

Inspection Criteria: Facility procedures ensure that changes to system requirements, documents, and installed components are adequately integrated and coordinated with those organizations affected by the change.

Inspection Activities: Review documentation, and interview individuals responsible for processing selected changes made to the system requirements, installed equipment, and associated documents.

Inspection Lines of Inquiry:

- Are documents affected by system modifications appropriately identified?
- Are system modifications accurately described, reviewed, and approved, as appropriate?
- Are systems, structures, and components affected by system modifications identified by facility management, users, operators, or others affected by the change?
- Are system modifications reviewed to ensure that system requirements and performance criteria are not affected in a manner that adversely impacts the ability of the system to perform its intended safety function?
- Are installation instructions, post-modification testing instructions, and acceptance criteria appropriately specified?
- Are safety basis and design documents affected by system modifications revised, as appropriate?

- Are engineering (including the design authority and technical disciplines), operations, and maintenance organizations made aware of system changes that affect them, and are they appropriately involved in the change process?
- Are other organizations affected by system modifications (such as training, document control, construction, hazards analysis/safety basis, fire protection, etc.) involved in the review and approval of the modifications, as appropriate?
- Have design changes been appropriately evaluated using the unreviewed safety question (USQ) process?
- Has an USQ determination been made on potential inadequacies of the documented safety analysis that have been identified?

Inspection Criteria: An USQ determination process has been developed and is implemented as required by 10 CFR 830.203.

Inspection Activities: Review the USQ process procedure(s) and the results of USQ evaluations.

Inspection Lines of Inquiry:

- Has the contractor defined the USQ process in a procedure and has DOE line management approved the procedure?
- Does the process conform to the requirements of 10 CFR 830.203?

Maintenance

Inspection Criteria: The system is maintained in a condition that ensures its integrity, operability, and reliability.

Inspection Activities: Review maintenance records, plans, and schedules for aging system equipment and components.

Inspection Lines of Inquiry:

- Does maintenance for the system satisfy system requirements and performance criteria in safety basis documents or other site maintenance requirements?
- Are criteria in place to accommodate aging-related system degradation that could affect system reliability or performance?
- Are conditions that require component replacement identified?
- Is component aging incorporated into preventive maintenance?

Inspection Criteria: System maintenance processes consistent with its safety classification are in place for corrective, preventive, or predictive maintenance, to manage the maintenance backlog.

Inspection Activities: Review work packages related to the system. Review system or component history files for selected system components for the past three years.

Inspection Lines of Inquiry:

- Are maintenance source documents, such as vendor manuals, industry standards, DOE orders, and other requirements documents, used as technical bases for developing system maintenance work packages?
- Is the system inspected periodically according to maintenance requirements, and are deficient conditions evaluated and/or corrected?
- Are excessive component failure rates identified?
- Are failure rates used in establishing priorities and schedules for maintenance or system improvement proposals?
- Has preventive maintenance been performed as prescribed?
- Has the corrective maintenance backlog been effectively managed?

Inspection Criteria: The system is periodically inspected in accordance with maintenance requirements to assess its material condition.

Inspection Activities: Review the procedure and process for performing inspections of the system, including interviews with personnel performing the inspections.

Inspection Lines of Inquiry:

- Do personnel performing inspections understand operational features, safety requirements, and performance criteria for the system?
- Are inspections sufficiently detailed to verify emergent conditions requiring corrective maintenance?
- Are conditions adequately evaluated to ensure the system is capable of performing its safety-related functions?
- Are dead legs, headers, and other stagnant sections of water fire protection systems periodically flushed to prevent buildup of solid materials and sludge that could interfere with flow in sprinkler systems or fire hoses.
- Have fire barriers been maintained?

Surveillance and Testing

Inspection Criteria: Surveillance and testing of the system demonstrate that the system is capable of accomplishing its safety functions and continues to meet applicable system requirements and performance

criteria. Surveillance and test procedures confirm that key operating parameters for the overall system and its major components remain within safety basis and operating limits. The acceptance criteria from the surveillance tests used to confirm system operability are consistent with the safety basis. Instrumentation and measurement and test equipment for the system are calibrated and maintained.

Inspection Activities: Review surveillance and testing procedures for the system and major components. Walkthrough the surveillance and testing procedures with appropriate facility personnel (e.g., test technicians, engineers, operations personnel, etc.). Review a sample of surveillance and testing results.

Inspection Lines of Inquiry:

- Do surveillance procedures contain instructions to perform the test successfully and to assure the validity of test results?
- Are key parameters used to verify that system performance meets system requirements and that performance criteria are appropriate for the current mission?
- Can parameters that demonstrate compliance with the safety basis be measured or physically verified?
- Does the system design include provisions necessary for conducting the tests?
- Are personnel knowledgeable and able to satisfactorily perform the test?
- Do procedures cite applicable safety requirements?
- Are limits, precautions, system and test prerequisite conditions, required data, and acceptance criteria included?
- Are appropriate data recording provisions included or referenced and used to record results?
- Does the procedure include provisions for listing discrepancies?
- Does the procedure require timely notification to facility management about any failure or discrepancy that could impact operability or negatively impact safety?
- Did appropriate personnel review the test results and take appropriate action?
- Is there a clear linkage between the test acceptance criteria and the safety documentation, and are the acceptance criteria capable of confirming that safety/operability requirements are satisfied?
- Was the test equipment used for the surveillance calibrated?
- Are DOE Facility Representatives cognizant of failed surveillance tests affecting system operability?

System Operations

Inspection Criteria: System operating procedures are technically accurate to achieve required system performance for normal, abnormal, remote shutdown, and emergency conditions.

Inspection Activities: Selectively review the technical adequacy and accuracy of system alarm response procedures and operating procedures for normal, abnormal, and emergency system operations. Verify the local operation of system equipment.

Inspection Lines of Inquiry:

- Is the system operated in accordance with the system design?

Inspection Criteria: Operations personnel are trained on proper system response, failure modes, and required actions involved in credible accident scenarios in which the system is required to function.

Inspection Activities: Review operator training for the system, focusing on the technical completeness and accuracy of the training manual and lesson plans.

Inspection Lines of Inquiry:

- Does training reflect system modifications?
- Have operations personnel been trained on modifications?

Inspection Criteria: Systems operations personnel are knowledgeable of system design requirements, in accordance with the facility safety basis.

Inspection Activities: On a sampling basis, walkthrough the system operating procedures and the system piping and instrumentation drawings with an operator(s). Conduct interviews with operators.

Inspection Lines of Inquiry:

- Can the procedures be performed as written?
- Are components and equipment accessible for normal and emergency conditions?
- If special equipment is required to perform procedures or operations, is the equipment available and in good working order?
- Is the operator's knowledge concerning equipment location and operation adequate?
- Are operators knowledgeable of the system, its role in accident mitigation, safety limits, and determinations of operability?
- Is the indication available to operate the equipment in accordance with applicable operating procedures and instructions?

- Are the environmental conditions assumed under accident conditions adequate for remote operation of the equipment?
- Are support systems and procedures adequate to support the system during event sequences it is designed to initiate?
- Are procedures for operating the system and equipment under emergency conditions adequate to assure the system meets its intended function?

Inspection Criteria: DOE line management has established and implemented processes to ensure effective line oversight of system operations.

Inspection Activities: Review DOE assessments of the system to determine the level of DOE line oversight and involvement.

Inspection Lines of Inquiry:

- What system reviews has DOE performed?
- Were deficiencies identified and corrected?

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APPENDIX E

ES&H AND ISM DIRECTIVES

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Applicable ES&H Program Management and ISM System Implementation Directives

- DOE Order 231.1, Chg 2, *Environment, Safety, and Health Reporting*
- DOE Order 414.1A, *Quality Assurance*
- DOE Order 420.1A, *Facility Safety*
- DOE Order 360.1A, *Federal Employee Training*
- DOE Order 425.1B, *Startup and Restart of Nuclear Facilities*
- DOE Order 430.1A, *Life Cycle Asset Management*
- DOE Order 433.1, *Maintenance Management Program for DOE Nuclear Facilities*
- DOE Order 442.1A, *Department of Energy Employees Concern Program*
- DOE Order 451.1B, Chg 1, *National Environmental Policy Act Compliance Program*
- DOE Order 151.1A, *Comprehensive Emergency Management System*
- DOE Order 3790.1B, *Federal Employee Occupational Safety and Health Program*
- DOE Order 5400.5, Chg 2, *Radiation Protection of the Public and the Environment*
- DOE Order 5480.4, Chg 4, *Environment Protection, Safety, and Health Protection Standards*
- DOE Order 5480.19, Chg 2, *Conduct of Operations Requirements for DOE Facilities*
- DOE Order 5480.20A, Chg. 1, *Personnel Selection, Qualification, Training and Staffing Requirements at DOE Nuclear Facilities*
- DOE Order 6430.1A, *General Design Criteria*
- DOE Order 4700.1, Chg 1, *Project Management System*
- DOE Order 251.1A, *Directives System Order*
- DOE Order 252.1, *Technical Standards Program*
- DOE Order 225.1A, *Accident Investigations*
- DOE Order 232.1A, *Occurrence Reporting and Processing of Operations Information*

**Applicable ES&H Program Management and
ISM System Implementation Directives**

- DOE Order 435.1, Chg 1, *Radioactive Waste Management*
- DOE Order 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*
- DOE Order 450.1, *Environmental Protection Program*
- DOE Order 452.2B, *Safety of Nuclear Explosive Operations*
- DOE Order 452.1B, *Nuclear Explosive and Weapons Surety Program*
- DOE Order 460.1A, *Packaging and Transportation Safety*
- DOE Order 460.2, Chg 1, *Departmental Materials Transportation and Packaging Management*
- DOE Order 470.2B, *Independent Oversight and Performance Assurance Program*
- DOE Policy 450.4, *Safety Management System Policy*
- DOE Policy 450.5, *Line Environment, Safety and Health Oversight*
- DOE Manual 411.1-1B, *Safety Management Functions, Responsibilities, and Authorities*
- 10 CFR Part 830, *Nuclear Safety Information*